Welcome to the Webinar!

Learning More About Green Charter Schools: Exploring Successful Models and Financing Options

We will be starting soon.
Learning More About Green Charter Schools: Exploring Successful Models and Financing Options

August 23, 2012
About the Resource Center

The **U.S. Department of Education** is committed to promoting effective practices, providing technical assistance, and disseminating the resources critical to ensuring the success of charter schools across the country. To that end, the Education Department, under a contract with American Institutes for Research, has developed the **National Charter School Resource Center**.
Presenters

Jennifer Afdahl Rice
Senior Loan Officer, NCB Capital Impact

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Director and General Counsel
Pacific Charter School Development
Learning More about Green Charter Schools: Exploring Successful Models & Financing Options

Jennifer Afdahl Rice | NCB Capital Impact
Agenda

- Introductions
- What is a Green Building?
- Green Design
- Green Financing Options
- Case studies
- Q & A
Financing charter schools for 18 years

$555 million

200,000 charter school seats nationwide

NCB Capital Impact is the largest Community Development Financial Institution (CDFI) charter school lender.
green school

a school building or facility that creates a healthy environment that is conducive to learning while saving energy, resources and money
Green School Elements

Day Lighting
Solar Panels
Recycling
Acoustics

Green roof
Low Emitting Materials
Water efficiency
Energy Efficient Lighting

WHAT MAKES A SCHOOL GREEN?
EXPLORE THE SCHOOL TO FIND SOME OF THE ELEMENTS THAT MAKE UP A TYPICAL GREEN LEARNING ENVIRONMENT.

Alternatively transportation
Recycling

Courtesy of USGBC Center for Green Schools
http://centerforgreenschools.org
Characteristics of a Green School

- Conserves energy and natural resources
- Improves indoor air quality
- Removes toxic materials from places where children learn and play
- Employs daylighting strategies and improves classroom acoustics
- Employs sustainable purchasing and green cleaning practices
- Improves environmental literacy in students

Source: USGBG
- Decreases the burden on municipal water and wastewater treatment
- Encourages waste management efforts to benefit the local community and region
- Conserves fresh drinking water and helps manage stormwater runoff
- Encourages recycling
- Promotes habitat protection
- Reduces demand on local landfills

Source: USGBG
- Roof-mounted solar panels
- Green roof
- White roof

Benefits

- Alternative energy source provides savings
- Energy savings & filter storm water run-off
- Energy savings
Acoustics

- Acoustical ceiling tiles
- Lined ductwork
- HVAC systems with properly placed vents

Benefits

More productive learning environment, allow teachers to be heard
Daylighting

- Skylights
- Large windows
- Adjustable blinds & shades
- Lightshelves

Benefits:

Reduced energy costs, reduced glare, even light distribution, improved student concentration and performance
The Heschong Mahone Daylighting Study (PDF) of more than 21,000 students showed a dramatic correlation between daylit school environments and student performance, including:

• 20% faster progression in math.
• 26% faster progression in reading.
• Views out of windows increased performance by 5-10%.

http://www.coe.uga.edu/sdpl/research/daylightingstudy.pdf
- Low VOC paint and carpet adhesives
- Ceiling tiles, wall systems and furniture constructed with non-toxic materials

Benefits

Improved air quality reduces absences related to respiratory conditions
Students in America miss approximately 14 million school days per year because of asthma*

Controlling exposure to indoor environmental factors, such as carbon monoxide, dust, and pollen, could prevent more than 65 percent of asthma cases among elementary school-age children**

More than 20 percent of public schools reported having unsatisfactory indoor air quality***

*US Center for Disease Control
**American Journal of Respiratory & Critical Care Medicine
***US Department of Education
air that is unfit to breathe

AFT’s 2008 Building Minds Minding Building report cites a GAO study showing 15,000 U.S. schools suffer from indoor air that is unfit to breathe.
Water Efficiency

- Low-flow sinks
- Waterless urinals
- Dual-flush toilets
- Rain water catchment
- Grey water tanks

Benefits

Water conservation, reduced costs, lower burden on municipal water system
Recycling

- Solid waste recycling programs
- Rainwater catchment & recycling
- Composting

Benefits:
Cost savings, reduced impact on municipal services, reduced reliance on landfills, energy savings
## LEED Checklist

### LEED 2009 for Schools New Construction and Major Renovation

#### Project Checklist

<table>
<thead>
<tr>
<th>Sustainability Category</th>
<th>Possible Points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sustainable Sites</strong></td>
<td><strong>24</strong></td>
</tr>
<tr>
<td><strong>Materials and Resources, Continued</strong></td>
<td><strong>19</strong></td>
</tr>
<tr>
<td><strong>Indoor Environmental Quality</strong></td>
<td><strong>6</strong></td>
</tr>
<tr>
<td><strong>Water Efficiency</strong></td>
<td><strong>11</strong></td>
</tr>
<tr>
<td><strong>Energy and Atmosphere</strong></td>
<td><strong>33</strong></td>
</tr>
<tr>
<td><strong>Innovation and Design Process</strong></td>
<td><strong>6</strong></td>
</tr>
<tr>
<td><strong>Regional Priority Credits</strong></td>
<td><strong>4</strong></td>
</tr>
<tr>
<td><strong>Materials and Resources</strong></td>
<td><strong>13</strong></td>
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</tbody>
</table>

### LEED Checklist Details

#### Sustainable Sites
- **Construction Activity Pollution Prevention**
- **Environmental Site Assessment**
- **Site Selection**
- **Development Density and Community Connectivity**
- **Brownfield Redevelopment**
- **Alternative Transportation—Public Transportation Access**
- **Alternative Transportation—Bicycle Storage and Changing Rooms**
- **Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles**
- **Alternative Transportation—Parking Capacity**
- **Site Development—Protect or Restore Habitat**
- **Site Development—Maximize Open Space**
- **Stormwater Design—Quantity Control**
- **Stormwater Design—Quality Control**
- **Heat Island Effect—Non-roof**
- **Heat Island Effect—Roof**
- **Light Pollution Reduction**
- **Site Master Plan**
- **Joint Use of Facilities**

#### Materials and Resources, Continued
- **Materials Reuse**
- **Recycled Content**
- **Regional Materials**
- **Rapidly Renewable Materials**
- **Certified Wood**

#### Indoor Environmental Quality
- **Minimum Indoor Air Quality Performance**
- **Environmental Tobacco Smoke (ETS) Control**
- **Minimum Acoustical Performance**
- **Outdoor Air Delivery Monitoring**
- **Increased Ventilation**
- **Construction IAQ Management Plan—During Construction**
- **Construction IAQ Management Plan—Before Occupancy**
- **Low-Emitting Materials**
- **Indoor Chemical and Pollutant Source Control**
- **Controllability of Systems—Lighting**
- **Controllability of Systems—Thermal Comfort**
- **Thermal Comfort—Design**
- **Thermal Comfort—Verification**
- **Daylight and Views—Daylight**
- **Daylight and Views—Views**
- **Enhanced Acoustical Performance**
- **Noise Prevention**

#### Water Efficiency
- **Water Use Reduction—20% Reduction**
- **Water Efficient Landscaping**
- **Innovative Wastewater Technologies**
- **Water Use Reduction**
- **Process Water Use Reduction**

#### Energy and Atmosphere
- **Fundamental Commissioning of Building Energy Systems**
- **Minimum Energy Performance**
- **Fundamental Refrigerant Management**
- **Optimize Energy Performance**
- **On-Site Renewable Energy**
- **Enhanced Commissioning**
- **Enhanced Refrigerant Management**
- **Measurement and Verification**
- **Green Power**

#### Innovation and Design Process
- **Innovation in Design: Specific Title**
- **Innovation in Design: Specific Title**
- **Innovation in Design: Specific Title**
- **Innovation in Design: Specific Title**
- **LEED Accredited Professional**
- **The School as a Teaching Tool**

#### Regional Priority Credits
- **Regional Priority: Specific Credit**
- **Regional Priority: Specific Credit**
- **Regional Priority: Specific Credit**
- **Regional Priority: Specific Credit**

### Total Possible Points
**110**
Green Buildings Can Reduce...

DIRECT SAVINGS FOR AN AVERAGE GREEN SCHOOL

$47,880
Annual Direct Energy Savings Per School

$95,760
Annual Total Direct Savings Per School
Resources

- Greening America’s Schools Costs and Benefits
  http://www.michigangreen.org/energy-news/GreeningAmericasSchools-GregoryKats.pdf

- Database of State Incentives for Renewables and Efficiency (DSIRE)
  http://www.dsireusa.org

- EnergySmart Schools, U.S. Department of Energy Guide to Financing EnergySmart Schools

- Energy Service Performance Contracts: National Association of Energy Service Companies
  http://www.naesco.org

- The Sustainable Answer Key
  www.ncbcapitalimpact.org
Low Income Investment Fund

Green Charter Schools: Exploring Successful Models and Financing Options
Agenda

• Introductions
• What is a Green Building?
• Green Design
• Green Funding Options
• Case studies
• Q & A
About LIIF

LIIF is a leading national community development lender with a mission of poverty alleviation. Since its founding in 1984, LIIF has invested $1 billion in strategies that support healthy families & communities.
LIIF & Charter Schools

• Invested more than $285 million in high-performing schools
• Created / improved 58,000 spaces for students
• Generate over $746 million in increased earning potential for youth.
Green Funding Options

• Debt
  – Targeted Green Financing Products
  – Traditional Facilities Financing
• Grants, Rebates & Incentives
• Energy Savings Performance Contracts, Leasing Arrangements & Power Purchase Agreements
Targeted lending products to support energy retrofits or the incorporation of green elements to existing facilities.
Debt: Targeted Green Financing Products

LIIF’s Green Opportunity (GO) Fund

- An innovative effort to improve energy and water efficiency in charter schools
- Provides free energy audit, technical support, and favorably termed debt
- Located in Los Angeles
GOALS of the GO Fund Pilot

1. **Improve property cash flow**
   - Identify ways to save the maximum amount of energy and water at a property as cost efficiently as possible

2. **Improve health of buildings and occupants**
   - More natural day light, better indoor air quality, and use of sustainable and healthy materials

3. **Reduce greenhouse gas emissions**
   - Attain a 20% overall reduction in energy use and costs

4. **Data Collection**
   - Analyze pre-retrofit energy usage, monitor implemented energy measures post-retrofit, and collect data that will demonstrate how savings are achieved
Go Fund Loan Terms

✓ Fund Size  $3 million
✓ Loan Size  Up to $250,000
✓ Interest Rate  5%
✓ Loan Term  Up to 10 years

Loans repaid with savings achieved as a result of the energy and water efficiency improvements.
The inclusion of green / energy efficiency elements in the construction or renovation of a charter school facility.
Debt: Traditional Facilities Financing

- Construction Loans
  - Interest-only, 6 – 18 month terms, capitalized interest
- Permanent Loans
  - Longer Term (7 – 10 years), Max Loan-To-Value, Amortizing
- Leasehold Improvement Loans
  - Term matches Lease, Leasehold mortgage / lease assignment
- Tax Exempt Bonds
  - Larger deal sizes, more complex structure
CDFI Lenders Supporting Green

- Low Income Investment Fund (LIIF)
- NCB Capital Impact
- Nonprofit Finance Fund (NFF)
- Local Initiatives Support Corporation (LISC)
- Self-Help
- The Raza Development Fund, Inc. (RDF)
- The Reinvestment Fund
Grants, Rebates & Incentives

- Government
  - Federal, State, County, City
- Utility Companies
- Non-profits / Foundations
  - Bill & Melinda Gates Foundation, Environmental Grantmakers Association
State Aid

• Can be funding from the Clean Air Act State Implementation Plan Budgets, Lawsuit Proceeds, Energy Portfolio Standards, System Benefit Trust Funds

• Often administered through state energy agency

• Example: Massachusetts Technology Collaborative (MTC) Renewable Trust
  
  – *Up to $350k in grants to install solar electric, wind electric or other clean energy technologies*
Incentives on Equipment Purchases, Energy Efficient Designs

• Can reimburse capital costs of equipment or labor
  – *Example: Efficiency Vermont (state energy agency) and the School Energy Management Program offer incentives to schools to upgrade lighting, HVAC and cooler systems*

• Can offset up-front investment costs to design & commission a school
  – *Example: New Hampshire High Performance School Incentive allows districts that design according to Northeast Collaborative for High Performance Schools Protocol to receive up to 3% reimbursement*
Utility Companies

- Savings By Design, California’s nonresidential, new construction energy efficiency program
  - Incentives can vary by project and range from $500 to $150,000
  - Must be a customer of participating Utility company to qualify: PG&E, SDG&E, SCE, SoCalGas, SMUD
Financing a Green Facility: What is Green?

**Green**: projects or practices that use sustainable, more renewable materials and methods

**Green Project ≠ $$ Savings**

**Energy**: projects or behaviors that save or eliminate energy consumption and as a result

**Energy Projects = $$ Savings**
Financing a Green Facility: Start with good due diligence

Develop a Baseline

- Identify all Energy using components at the property
- Rank components in order of Payback

Evaluate Opportunities for Other Green Components

- Low VOC paints, sealants, caulking
- Green Cabinets and floor coverings
Best Charter School Energy Opportunities

(Data provided by EMG)

- High efficiency HVAC
- Controls on HVAC
- Lighting controls
- Natural Light/Shading
- Point of use hot water heater
- Solar hot water heating
- Turn off office equipment
- Offsite food preparation
- Incentivize cleaning / custodial crew as energy monitors

<table>
<thead>
<tr>
<th>System</th>
<th>Percent Annual Energy Usage</th>
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<tbody>
<tr>
<td>HVAC</td>
<td>56%</td>
</tr>
<tr>
<td>Lighting</td>
<td>17%</td>
</tr>
<tr>
<td>Water Heating</td>
<td>7%</td>
</tr>
<tr>
<td>Office Equipment</td>
<td>12%</td>
</tr>
<tr>
<td>Onsite Cooking</td>
<td>6%</td>
</tr>
<tr>
<td>Other</td>
<td>2%</td>
</tr>
</tbody>
</table>
Where Does the Energy Savings Come From?

Best Payback component at charter schools
(Data provided by EMG)

<table>
<thead>
<tr>
<th>Components</th>
<th>Actual Savings</th>
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</thead>
<tbody>
<tr>
<td>CFL Light Bulbs (Interior)</td>
<td>42%</td>
</tr>
<tr>
<td>Refrigerator</td>
<td>40%</td>
</tr>
<tr>
<td>Low Flow Toilets</td>
<td>38%</td>
</tr>
<tr>
<td>Shower Heads</td>
<td>32%</td>
</tr>
<tr>
<td>HVAC Split System</td>
<td>34%</td>
</tr>
<tr>
<td>Faucet Aerators</td>
<td>33%</td>
</tr>
</tbody>
</table>

*Based on Green v. Existing component usage, 84 Public and Charter K-12 Schools*
Financing a Green Facility: Energy Benchmarking

- Hard to manage what you don’t measure
- Identifies energy opportunities
- Baseline analysis of energy consumption /cost
- Provides metric to measure and compare energy usage
Financing a Green Facility: Energy Audits

• Three Levels of Energy Audits
  Level I - Walk-through Analysis
  Level II - Energy Survey and Analysis
  Level III – Detailed Analysis of Capital-Intensive Modifications

• Detailed review of all energy consuming components

• System improvements to lower energy usage - Energy Conservation Measures (ECM)

• Ranks ECMS based on Savings to Investment Ratio (SIR)
Financing a Green Facility: Energy Planning & Implementation

- Prioritize opportunities and budget
  - Recommend viable candidates for renewable energy, solar, wind, geothermal, combined heat power (CHP)
- Explore project based incentives and grants available
- Internal guidance for the implementation of Energy Plan
  - Energy Training and Awareness Program for stakeholders
- Outline process for measuring and verifying savings
A Developer’s Perspective on Building Green

A Case Study:
Animo Pat Brown Charter High School
8255 Beach Street, Los Angeles, CA 90001

Animo Pat Brown Charter High School is operated by Green Dot Public Schools
Agenda

- Introductions
- What is a Green Building?
- Green Design
- Green Funding Options
- Case studies
- Q & A
Overview of Pacific Charter School Development, Inc.

• PCSD is a California based non-profit developer of facilities for charter schools
• PCSD was established to address a central hurdle in the establishment of charter schools—the availability of quality facilities
• PCSD finds, finances, and builds facilities and then leases these campuses to its charter school clients
• PCSD’s goal is to sell the developed campus to its client so that it can recycle its philanthropic equity into other projects and thus create more seats
• To date, PCSD has created 16,306 new charter school seats for California’s leading charter school operators
Why build a Green Project?

• It’s the right thing to do…and you will be imparting these values to the next generation of leaders. Global, regional and direct benefits.
• Jurisdictions are mandating green building practices.
• May assist in fundraising efforts.
• May assist in recruiting efforts.
• May be used as a tool in your curriculum to illustrate scientific/math principles.
• You may already be contemplating incorporating many green elements in your facility plans. Some examples:
  • Adaptive Reuse—traditionally PCSD’s projects have been adaptive reuses of existing buildings that have outlived their usefulness for other purposes
  • Daylighting—Maximizing natural light penetration by either punching holes in walls to create windows or putting skylights in.
Project Summary for Animo Pat Brown

**Architect:** Berliner and Associates Architecture  
**General Contractor:** Blackwell Construction  
**Seats Created:** 570  
**Total Building Size:** 40,099 sq ft  
**Total Property Size:** 2.01 acres  
**Total Project Cost:** $11.4 M  
  **Hard costs:** $6 M  
**Project Manager:** Patrick Ontiveros  
**LEED Certification:** LEED Silver. First High School in California to achieve LEED Silver certification.
What is the cost premium for doing a LEED certified building?

### Soft Costs

<table>
<thead>
<tr>
<th>Service</th>
<th>Cost</th>
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<tbody>
<tr>
<td>USGBC Registration</td>
<td>$450.00</td>
</tr>
<tr>
<td>USGBC Design Review</td>
<td>$1,250.00</td>
</tr>
<tr>
<td>USGBC Construction Review</td>
<td>$500.00</td>
</tr>
<tr>
<td>Commissioning Agent</td>
<td>$43,799.35</td>
</tr>
<tr>
<td>Additional Architecture &amp; Engineering Fees</td>
<td>$34,000.00</td>
</tr>
<tr>
<td>Green Power Purchase</td>
<td>$1,665.00</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$81,664.35</strong></td>
</tr>
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</table>

### Hard Costs

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Waterless Urinals (Premium)</td>
<td>$8,000.00</td>
</tr>
<tr>
<td>High Efficiency HVAC Units (Premium)</td>
<td>$70,000.00</td>
</tr>
<tr>
<td>Certified Wood (Premium)</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>Doors</td>
<td>$1,184.00</td>
</tr>
<tr>
<td>Recycled Materials for Use in Bathrooms</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>Shower in One of the Bathrooms</td>
<td>$3,500.00</td>
</tr>
<tr>
<td>Bike Racks</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>Low Emitting Materials (Premium)</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>HVAC LEED Certification Testing Work</td>
<td>$24,700.00</td>
</tr>
<tr>
<td>Duct Silencers</td>
<td>$95,070.00</td>
</tr>
<tr>
<td>Stormwater Treatment Tank System</td>
<td>$31,160.00</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>$278,614.00</strong></td>
</tr>
</tbody>
</table>

**TOTAL**

|     | $360,278.35 |

As % of Total Project Cost ($11.45 M) 3.15%
As % of Total Hard Cost ($6 M) 4.64%

Before this project was completed anecdotal evidence suggested that the cost premium is on average 15%. However, the premium for doing a silver LEED certified project at Beach Street was about 5%. See chart.

“Most trade contractors are already working at [the] Silver level. The cost is between 0 - 5% depending on the point selection items by the project team.”

--Javan Nabili, gkkworks
The LEED Rating System for Schools is broken into 7 sections:

1. Sustainable Sites
2. Water Efficiency
3. Energy & Atmosphere
4. Materials and Resources
5. Indoor Environmental Quality
6. Innovation in Design Process
7. Regional Priority

Note that the rating system is not only concerned with the design features that are incorporated into the final project but also with the construction process and how the project is operated and maintained. This is true for both LEED and CHPs.
Examples of LEED Features at Animo Pat Brown

• **SUSTAINABLE SITES:**
  – Measures to reduce automobile use—installation of bicycle racks, preferential parking for low emitting/fuel efficient vehicles and carpools

• **WATER EFFICIENCY:**
  – Drought resistant landscaping results in 71.8% reduction in water consumption

• **ENERGY & ATMOSPHERE:**
  – Installation of systems that maximize energy efficiency—HVAC, lighting and water systems

• **MATERIALS & RESOURCES:**
  – Recycling collection and storage on site is part of operations and maintenance
  – Adaptive reuse of an existing building

• **INDOOR ENVIRONMENTAL QUALITY:**
  – No smoking allowed on any part of the campus—both during and after construction
  – Maximized interior daylighting through use of skylights and windows

• **INNOVATION IN DESIGN:**
  – Green housekeeping—only low impact cleaning products and equipment are used
8255 Beach Street before it was developed as a charter school campus
Animo Pat Brown Charter High School
Another PCSD Green Project

Ánimo Ralph Bunche Charter High School
&
Ánimo Jefferson Charter Middle School

Architect: John Friedman Alice Kimm Architects
General Contractor: Del Amo Construction
Seats Created: 1,120
Total Building Size: 77,173 sq ft
Total Property Size: 1.93 acres
Project Cost: $22.3 M
Project Managers: Megan Hadden & Pete Kyriacou

LEED Certification: Achieved LEED certified status in November 2009
First high school in California to achieve the LEED for Schools Certification!!!
East 27th Street – Animo Ralph Bunche & Animo Jefferson
Plan early

- Determine whether you can afford the added cost.
- There may be long lead times for some products.
- Some LEED credits may be hard to achieve and your time may be better spent on other credits – for example, MR Cr-Regional Materials
- Some LEED credits may be too expensive for the number of points achieved
Lessons Learned

Hire a contractor who has worked on green buildings.

➢ If you hire a GC who has already gone through the process, it makes life easier.

➢ If you hire someone who has not gone through the process, things become more complicated, but not impossible.

➢ Make sure that your construction contract explicitly states that the contractor is to deliver a LEED certified building (the standard AIA contract does not include this).
Lessons Learned

Hire an architect who has worked on green buildings. If you are doing a LEED project, hire someone who is a LEED accredited professional (AP).

- Try to find someone who has a demonstrated history of balancing green features with cost. It is easy to over-design if you are not careful.

- Make sure that at the outset your contract with your architect explicitly states that they are to deliver plans and specs for a LEED project (the standard AIA contract does not include this).
Additional Resources:

www.usgbc.org and www.greenschoolbuildings.org
www.chps.net

For California State:
www.green.ca.gov/default.htm

For Los Angeles City and County:
www.green.lacounty.gov
www.environmentla.org
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Questions?

Raise your hand or enter your question in the chat box on the left side of your screen.
Thank you for participating.

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  http://www.charterschoolcenter.org/webinars/
- Please share your feedback with us through the evaluation.
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