Northside I.S.D. High Performance Schools
Ten Years of Sustainable School Success and a Plan for the Future
A4LE 2019 Southern Region Conference
Presenters:

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Assistant Superintendent for Facilities and Operations
Northside ISD

Jerry Lammers, AIA, LEED AP BD+C
Principal
Alamo Architects

Team Members:  Nicki Marrone:  Senior Associate, Alamo Architects
Trey McDougall:  Cleary Zimmermann Engineers
Chris Johnson:  Bartlett Cocke Construction
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History of NISD’s High Performance School Initiatives

Recent Evolution of Building Codes & Certification Programs

Opportunity for Re-Evaluation

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Options for Moving Forward
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History of NISD and High Performance Schools Initiatives

School Districts in Bexar County
History of NISD and High Performance Schools Initiatives

Northside ISD Improvement Bonds-

Past:

Over 50 New Schools Built in the Last 20 Years

<table>
<thead>
<tr>
<th>Year</th>
<th>Bond Amount</th>
<th>Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>$250 Million</td>
<td>61,333</td>
</tr>
<tr>
<td>2001</td>
<td>$495 Million</td>
<td>65,717</td>
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<tr>
<td>2004</td>
<td>$439 Million</td>
<td>74,018</td>
</tr>
<tr>
<td>2007</td>
<td>$692.67 Million</td>
<td>85,546</td>
</tr>
<tr>
<td>2010</td>
<td>$535 Million</td>
<td>91,578</td>
</tr>
<tr>
<td>2014</td>
<td>$648.24 Million</td>
<td>101,477</td>
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Future:

<table>
<thead>
<tr>
<th>Year</th>
<th>Bond Amount</th>
<th>Enrollment</th>
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<tbody>
<tr>
<td>2018</td>
<td>$850 Million</td>
<td>106,666</td>
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</table>

1 High School, 1 Middle Schools, 2 Elementary Schools
History of NISD and High Performance Schools Initiatives

Pre-2007:

NISD Built Well Designed, Efficient, Durable School Facilities
- Well Developed Program and Systems Standards
- Initial Study showed Meet LEED Certified
History of NISD and High Performance Schools Initiatives

Pre-2007: NISD Built Well Designed, Efficient, Durable School Facilities

2007 Bond: NISD Pilots 2 Green / High Performance School Certification Programs for New Schools:

• Martin Elementary: USGBC LEED v2 for Schools
  -LEED Certified Silver:
    Third Party Verified

• Mireles Elementary: Tx-CHPS 2009
  -Tx-CHPS Designed:
    Design Team Verified
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2010 & 2014 Bonds: All New Schools are TX-CHPS Designed
- 8 Elementary School
- 2 Middle Schools
- 1 High School
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2014-2017: EPA Energy Smart Certifications

- 10 Campuses
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</tr>
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<tr>
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</tr>
<tr>
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<tr>
<td><strong>2017:</strong> NISD /CPS Energy Benchmarking Study</td>
</tr>
</tbody>
</table>
Energy Use:

Folks MS –
Opened 2012

Uses $0.78 vs $1.10 psf of energy compared to the Median Middle School in San Antonio = $64,000 per yr. in Energy savings

NISD Average= $163 per student

Folks –
TX-CHPS Designed

Energy performance benchmarking analysis

Folks Middle School / Northside ISD
9655 Swayback Ranch, San Antonio, TX

<table>
<thead>
<tr>
<th>CLEAResult benchmarks</th>
<th>Median*</th>
<th>Your school</th>
<th>Color scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy use index (kBtu/sq.ft)</td>
<td>52.7</td>
<td>39.8</td>
<td>Excellent</td>
</tr>
<tr>
<td>Energy cost index ($/sq.ft)</td>
<td>$1.10</td>
<td>$0.78</td>
<td>Above avg</td>
</tr>
<tr>
<td>Energy cost per student</td>
<td>$224</td>
<td>$156</td>
<td>Below avg</td>
</tr>
<tr>
<td>EPA portfolio manager score</td>
<td>59</td>
<td>73</td>
<td>Poor</td>
</tr>
</tbody>
</table>

* Median for other gas-heated middle school facilities in the San Antonio climate region.
Bernal Middle School: Construction Waste Management

92% of Construction Waste diverted

1340 tons of 1451 total tons of construction materials was recycled instead going to a landfill

Cost: $132,303

Note:

25% diversion is the TX-CHPS Prerequisite
History of NISD and High Performance Schools Initiatives

Impact on NISD Schools

Educational Murals

Exterior Window Shades
Reduce Glare / Heat Gain

School Gardens
History of NISD and High Performance Schools Initiatives

IECC/TX-CHPS/LEED implementation example: Classroom Lighting:

**Pre – 2007**

- No Certification

  - Fluorescent 32 watt fixtures
  - Two Levels of switching
  - Changing out fixtures with mercury containing ballasts

**864** Watts per Classroom
### History of NISD and High Performance Schools Initiatives

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#### Post – 2007
- TX-CHPS /LEED
- Fluorescent 28 watt high efficiency fixtures
- Two Levels of switching dictated by TX-CHPs-LEED

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<th>Watts per Classroom</th>
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<th>504</th>
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<td>Pre-2007</td>
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**Current Practice**
IECC/TX-CHPS/LEED
- LED 47 watt fixtures
- Two Levels of switching dictated by TX-CHPs-LEED
- Occupancy censors

864 Watts per Classroom
504 Watts per Classroom
423 Watts per Classroom
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**Future /2018**
IECC /TX-CHPS /LEED
- LED 39 watt fixtures
- Two Levels of switching dictated by TX-CHPs-LEED
- Occupancy censors
- Dimmable Fixtures within the Daylighting Zone

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<thead>
<tr>
<th>Pre – 2007</th>
<th>Post – 2007</th>
<th>Current Practice</th>
<th>Future /2018</th>
</tr>
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<tbody>
<tr>
<td>No Certification</td>
<td>TX-CHPS /LEED</td>
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Impact to NISD:
- Continuously Evolving “District Standard Light Fixture”
- Change in District Standard Switching
- Additional Replacement Fixtures to Stock
- Additional Devices To Maintain
- Reduced Electricity Consumption
- Design, Certification and Construction Costs

Energy Use for Classroom Lighting Reduced 60%

Watts per Classroom:
- Pre – 2007: 864
- Post – 2007: 504
- Current Practice: 423
- Future /2018: 351
History of NISD and High Performance Schools Initiatives

TX-CHPS/LEED implementation example: Classroom Environment Quality

Pre – 2007
No Certification

• No limit for Volatile Organic Compounds (VOC's) in finishes (flooring, furniture, paint)
• No specific requirement for windows
• No requirement for calculating acoustical separation and performance

Empirical Based Design for Finishes, Windows, and Acoustical Performance
History of NISD and High Performance Schools Initiatives

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Post – 2007/Current
TX-CHPS /LEED

• Credits for Low or No-VOC in finishes (flooring, paint, sealants)
• Credits for Larger windows and shades
• Prerequisite set minimum acoustical requirements for separation and performance
• Design Team calculations and documentation required for TX-CHPS (LEED requires acoustic testing)

Empirical Based Design
for Finishes, Windows, and Acoustical Performance

High Performance Design
Low Emitting Materials, Window Design Criteria, and Minimum Acoustical Performance
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Future/2018
TX-CHPS 2015 / LEED v4
- Prerequisite requires Low VOC for paints flooring and composite wood
- Prerequisite requires glare control at all windows
- Prerequisite sets a higher level of acoustical performance
- Design Team and Third Party Consultant required to gauge performance

Empirical Based Design
for Finishes, Windows, and Acoustical Performance

High Performance Design
Low Emitting Materials, Window Design Criteria, and Minimum Acoustical Performance

Evolved High Performance Design
Updated Standards for Low Emitting Materials, Window Design Criteria, and Minimum Acoustical Performance
**TX-CHPS/LEED implementation example: Classroom Environment Quality**

**Impact to NISD:**
- Evolving Standards for Typical Finish Materials
- Larger Windows now Typical
- Minimum Acoustical Performance now Designed and Documented
- Better Learning, Teaching Environment
- Design, Certification And Construction Costs

**Pre – 2007**
No Certification

- No limit for Volatile Organic Compounds (VOC's) in finishes (flooring, furniture, paint)
- No specific requirement for windows
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Recent Evolution of Building Codes & Certification Programs

Opportunity for Re-Evaluation

TX-CHPS 2015 LEED For Schools V4 Case Study – New NISD Middle School

Options for Moving Forward
What Do Certification Programs Measure?

Integration of Program, Design, Construction, and Operations
Inclusivity of the Process, Community, School District, AE Team, Contractor
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Indoor Environmental Quality
Indoor Pollutants, Ventilation, Views, Daylighting, Acoustics
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Energy Use
Grid Based, Mechanical Systems, Lighting, Renewable
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Grid Based, Mechanical Systems, Lighting, Renewable

Water Use
Interior and Exterior
High Performance Schools – The Basics

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Water Use
Interior and Exterior

Site Sustainability
Location, Drainage, Transportation, Adjacent Hazards, Low Impact Development
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Materials & Waste Management
Environmental Qualities, Recycled Content, Construction Waste Management
What Do Certification Programs Measure?

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Water Use
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Site Sustainability
Location, Drainage, Transportation, Adjacent Hazards, Low Impact Development

Materials & Waste Management
Environmental Qualities, Recycled Content, Construction Waste Management

Operations & Metrics
Furnishings, Cleaning, Training, Maintenance, Benchmarking
Evolution of Building Codes & Certification Programs

What has Changed Since we Started?

LEED v2 for Schools \[\rightarrow\] LEED v4 for Schools

NOW

Launched late 2013
LEED v4.1 expected in 2019
Evolution of Building Codes & Certification Programs

What has Changed Since we Started?

- **LEED v2 for Schools**: Launched late 2013
  - LEED v4.1 expected in 2019

- **TX-CHPS**: Launched October 2016
  - (v3) Core Criteria expected in 2019

NOW

**LEED v4 for Schools**

**TX-CHPS 2015 (v2)**
Evolution of Building Codes & Certification Programs

What has Changed Since we Started?

**LEED v2 for Schools**
- NOW

**LEED v4 for Schools**
- Launched late 2013
- LEED v4.1 expected in 2019

**TX-CHPS**
- NOW

**TX-CHPS 2015 (v2)**
- Launched October 2016
- (v3) Core Criteria Public Comment in 2019

**Building Codes:**

**2006 IECC**
- International Energy Conservation Code

**2018 IECC**
- Adopted by CoSA in 2018, State to follow
- Updates every 3 years
Evolution of Building Codes & Certification Programs

2015 & 2018 Building Code Changes Have Increased Building Performance Requirements:

- Raised HVAC Systems Efficiency Requirements
- Increased Outdoor Air Requirements
- Increased Lighting System Efficiency Requirements
- Increased Building Insulation Requirements
- Requires Insulated and Tinted Glass – and/or Exterior Shades
- Requires Basic Energy Modeling
- Requires Basic Building Commissioning
- Water Conservation requirements
- Daylighting Requirements tied to Lighting Systems
- Roof Sun Reflectivity Requirements
- Requires Air Tight Building

Energy and Water Efficiency
Adoption of the 2018 IECC required Energy Performance that surpassed the prerequisites of previous Certification Programs:

- LEED for Schools (v2)
- TX-CHPS (v1)

2015 & 2018 Building Code (IECC) Requirements:

<table>
<thead>
<tr>
<th>Year</th>
<th>Designed Energy Use</th>
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<tbody>
<tr>
<td>2006 IECC</td>
<td>64 kBtus psf</td>
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<tr>
<td>TxCHPS</td>
<td></td>
</tr>
<tr>
<td>LEED For Schools v3</td>
<td></td>
</tr>
<tr>
<td>2012 IECC</td>
<td>58 kBtus psf</td>
</tr>
<tr>
<td>2015 TxCHPS</td>
<td></td>
</tr>
<tr>
<td>LEED v4</td>
<td></td>
</tr>
<tr>
<td>2015 IECC</td>
<td>55 kBtus psf</td>
</tr>
<tr>
<td>2018 IECC</td>
<td>52 kBtus psf</td>
</tr>
<tr>
<td>Current CoSA Standard</td>
<td></td>
</tr>
</tbody>
</table>

* Bernal 41.7 kBtus, Folks 39.8 kBtus actual
### Program Credit Distribution

#### Tx-CHPS 2015
- Integration: 8% (20)
- Indoor Environmental Quality: 33% (83)
- Energy: 25% (63)
- Water: 8% (19)
- Site: 8% (21)
- Materials and Waste Mgmt.: 10% (25)
- Operations and Metrics: 8% (19)

Total: 100% 250

#### LEED for Schools v4
- Innovation: 6% (7)
- Indoor Environmental Quality: 15% (16)
- Energy and Atmosphere: 28% (31)
- Water Efficiency: 11% (12)
- Sustainable Sites: 11% (12)
- Materials & Resources: 13% (13)
- Location and Transportation: 12% (15)
- Regional Priority: 4% (4)

Total: 100% 110

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**Evolution of Building Codes & Certification Programs**

<table>
<thead>
<tr>
<th>Credit</th>
<th>Description</th>
<th>Prereq</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQ 1.0</td>
<td>HVAC Design - ASHRAE 62.1</td>
<td>p</td>
<td>7</td>
</tr>
<tr>
<td>EQ 1.1</td>
<td>Enhanced Filtration</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>EQ 1.2</td>
<td>Dedicated Outdoor Air System</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>EQ 2.1</td>
<td>Pollutant and Chemical Source Control</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

**Indoor Environmental Quality**

- Minimum Indoor Air Quality Performance: 2
- Environmental Tobacco Smoke Control: 3
- Minimum Acoustic Performance: 1
- Enhanced Indoor Air Quality Strategies: 2
- Low-Emitting Materials: 3
- Construction Indoor Air Quality Management Plan: 1
- Indoor Air Quality Assessment: 2
- Thermal Comfort: 1
- Interior Lighting: 2
- Daylight: 3
- Quality Views: 1
- Acoustic Performance: 1

Total: 16
Evolution of Building Codes & Certification Programs

Prerequisites

TX-CHPS 2015

1. Integrated Design
2. Educational Display
3. HVAC Design
4. Outdoor Moisture Control
5. Low Emitting Materials
6. Daylighting Glare Protection
7. Acoustic Performance
8. Energy Performance
9. Construction Waste Management
10. Facility Staff and Occupant Training
11. Performance Benchmarking
12. Building Verification (Commissioning)
13. Site Selection
14. Construction Site Runoff Control
15. Storage and Collection of Recyclables

LEED for Schools v4

1. Construction Activity Pollution Prevention
2. Environmental Site Assessment
3. Outdoor Water Use Reduction
4. Indoor Water Use Reduction
5. Building Level Water Metering
6. Fundamental Commissioning
7. Minimum Energy Performance
8. Building Level Energy Metering
9. Fundamental Refrigerant Management
10. Storage and Collection of Recyclables
11. Construction Waste Management Planning
12. Minimum Indoor Air Quality Performance
13. Environmental Tobacco Smoke Control
14. Minimum Acoustic Performance
New Prerequisite: an example

TX-CHPS 2015: Performance Benchmarking

Requirement:

- The school must adopt a policy of benchmarking to track its energy use over time in order to perform the following:

- Conduct a post-occupancy analysis of the school’s Indoor Environmental Quality and Energy Performance after 1-2 years
  - OR -

- Perform Recommissioning after 2 to 5 years

Implementation:

- Option 1: CHPS Operations Report Card Score of 75 for the Energy Efficient Category
- Option 2: EPA Portfolio Manager Score of 75
- Option 3: Use the Original Energy Model and track the Utility Data and Cost annually
Evolution of Building Codes & Certification Programs

Changes to LEED for Schools and TX-CHPS:

Requirements have evolved to address new standards, best practices, and updated expectations for learning environments.
Evolution of Building Codes & Certification Programs

Changes to LEED for Schools and TX-CHPS:

Requirements have evolved to address new standards, best practices, and updated expectations for learning environments.

- Realigned and Updated Point Categories and Prerequisites
  - Still Weighted to Energy Usage and Indoor Environmental Quality
- Certification requirements are more difficult to reach
  - Updated to 2012, 2013 and/or current standards
- Increased AE Team time necessary for Research and Documentation
  - Material Attributes, Environmental Product Disclosures, Life Cycle Assessment
  - Crime Prevention Through Environmental Design
- 3rd Party Verification Required
  - Acoustic Testing
  - Increased building Electrical, Mechanical and Irrigation Systems Commissioning
- Increased Focus on Operations and Maintenance.
  - Benchmarking and Follow up Required
- Increased School District and Community Participation Required
  - Project Integration Meetings must include Community Members
How is Success Recognized?

- **TX-CHPS**
  - TX-CHPS Designed, (Design Team Verified),
  - TX-CHPS Verified,
  - Verified Leader Verified
    - Registration Fee - $900
    - Verification Fee – $7200-10,800
    - Varies by building size and level of Certification

- **LEED for Schools**
  - Certified, Silver, Gold, Platinum
    - Registration - $1200
    - Verification Fee – $11,000
    - Varies by building size
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Options for Moving Forward
NISD Re-Evaluation

Why Re-Evaluate Green/High Performance Building Certification for Northside ISD Schools?

- New 2018 Capital Bond Program
- Old Versions of Programs are Unavailable
  - Programs Have Evolved
- Local Adoption of the 2018 International Energy Conservation Code
- Re-Visit the Cost/Value of some of the High Performance Features
Benefits of Certifying a School

Verify Desired Outcomes:
- Adds a layer of accountability for the district, design and construction teams.
- Indicates that design and building processes met the standards of the certification program.
- Documents sustainable design and construction effort.
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What are the Costs?
- NISD personnel costs
- Design team costs
- Third party verification costs
- Construction costs
  - Process related
  - Material / equipment related
- Certification costs – registration / verification.
Updated Certification Programs Will Require Updates to NISD Practices and Procedures:

- Participation of Non-District Personnel in the Design Process
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NISD Re-Evaluation

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- Increased User Training Requirements
- 3rd Party testing
  - Increased Commissioning Requirements
  - Third Party Acoustic Testing
Table of Contents

History of NISD’s High Performance School Initiatives

Recent Evolution of Building Codes & Certification Programs

Opportunity for Re-Evaluation

TX-CHPS 2015 LEED For Schools V4 Case Study – New NISD Middle School

Options for Moving Forward
Kallison Ranch Middle School

- New Middle School for 1200 students
- Similar to Two Previous Middles Schools Certified TX-CHPS 2009
- Site Already Selected
- CM at Risk Contractor Already Selected
- Designed: 2018-2019
- Constructed: September 2019-July 2021
NISD Case Study

- **TX-CHPS – Designed, LEED Certified Level of Certification**
  - Include all prerequisites

- **Best Fit For Northside**
  - Identify and pursue similar credits as previously obtained

- **Achieve No Cost/Minimal Cost Credits**
  - Assumes cost-effective credits are part of certification total

- **Separate Costs:**
  - Design, Documentation, Third Party, Construction Costs

- **Northside Personnel Costs:**
  - Assume most tasks are outsourced except project management costs
John M. Harlan High School

McClung Transportation Center

Alamo Architects
NISD Sustainable Schools
A Comparative Overview
December, 2018
## NISD Case Study

Compared Current NISD Standards, LEED and TX-CHPS

Created Categories:
- Code Minimum or NISD Standard
- “Likely” and “Reach” TX-CHPS 2015
- “Likely” and “Reach” LEED for Schools

<table>
<thead>
<tr>
<th>Credit Number</th>
<th>Title</th>
<th>Prerequisite</th>
<th>Max Possible Pts</th>
<th>Likely LEED</th>
<th>Max Possible Pts</th>
<th>Prerequisite</th>
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<td>II 8.1</td>
<td>Climate Change Action / Carbon Footprint Reporting</td>
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<td>II 9.1</td>
<td>Crime Prevention Through Environmental Design</td>
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<tr>
<td>II 10.1</td>
<td>Innovation (CHPS Verified Projects only)</td>
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<td><strong>Subtotal this Category</strong></td>
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<td><strong>18</strong></td>
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**LEED for Schools**

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<th>Likely LEED</th>
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<td></td>
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<td>Regional Priority: Specific Credit</td>
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*Note: LEED Acquired Professional*
NISD Case Study

- Evaluated all “Likely” and “Reach” TX-CHPS / LEED Costs:
  - Design
  - Documentation
  - Construction
  - Third Party Verification
  - Construction
  - NISD Staff Cost

<table>
<thead>
<tr>
<th>Category</th>
<th>Credit Title</th>
<th>Requirements and potential Changes Required to NISD Practices and Procedures</th>
<th>TX-CHPS Design Cost (Research &amp; Design)</th>
<th>Documentation Cost (Calculations)</th>
<th>TX-CHPS Contractor Cost</th>
<th>Total Cost</th>
<th>NISD Participation Required</th>
<th>Points</th>
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</thead>
<tbody>
<tr>
<td>Architectural Prequisite</td>
<td>II.0 - Integrated Design</td>
<td>Hold 2 (two) integrated Design Workshops with all stakeholders, including “School Occupants Group,” which includes principal, teachers, students, parents, and community members</td>
<td>$0</td>
<td>$250</td>
<td>$0</td>
<td>$250</td>
<td>YES</td>
<td>1</td>
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<tr>
<td>Architectural Prequisite</td>
<td>III.1 - Enhanced Integrated Design</td>
<td>Integrated Design Workshops to include GC and major subcontractors; BIM must be used to coordinate MEP trades.</td>
<td>$0</td>
<td>$250</td>
<td>$0</td>
<td>$250</td>
<td>YES</td>
<td>2</td>
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<tr>
<td>Architectural Prequisite</td>
<td>III.3 - Crime Prevention Through Environmental Design</td>
<td>Design the School according to CPTED Strategies: Conduct a CPTED workshop with stakeholders AE team must produce a CPTED Plan. Requires a letter from a “CPTED Professional”</td>
<td>$1,200</td>
<td>$250</td>
<td>$0</td>
<td>$1,450</td>
<td>YES</td>
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<tr>
<td>Architectural Prequisite</td>
<td>EQ 5.2 - Indoor/Moisture Management</td>
<td>Protect building materials from moisture. Floors on Slab on Grade to be protected with vapor retarder, and tested for internal moisture. No paper based gypsum within 6 feet of the floor. More restrictive than 2009; applies to all materials inside envelope</td>
<td>$500</td>
<td>$250</td>
<td>$0</td>
<td>$750</td>
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<tr>
<td>Architectural NEW Prequisite</td>
<td>EQ 7.0 - Low Emitting Materials</td>
<td>VOC requirements for Paint, Flooring and Composite Wood. More restrictive than 2009; may require alternates to NISD Standard Material Selections</td>
<td>$1,200</td>
<td>$500</td>
<td>$0</td>
<td>$1,700</td>
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<tr>
<td>Architectural Prequisite</td>
<td>EQ 7.1 - Additional Low Emitting Materials</td>
<td>VOC requirements for adhesives, sealants, furniture, classroom, and office spaces. More restrictive than 2009; may require alternates to NISD Standard Material Selections</td>
<td>$1,200</td>
<td>$500</td>
<td>$0</td>
<td>$1,700</td>
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<td>5</td>
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<tr>
<td>Architectural NEW Prequisite</td>
<td>EQ 11.0 - Daylighting/ Glare Protection</td>
<td>Prevent glare from reaching Teaching Surfaces. Not Previously Required for CHPS.</td>
<td>$1,200</td>
<td>$500</td>
<td>$0</td>
<td>$1,700</td>
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<tr>
<td>Architectural NEW Prequisite</td>
<td>EQ 14.0 - Acoustical Performance</td>
<td>Acoustic criteria for background noise, large spaces, exterior walls, and separation walls. More restrictive than 2009. District must retain an Acoustic Testing Agent during construction (fee for service indicated here.)</td>
<td>$8,000</td>
<td>$28,000</td>
<td>$60,000</td>
<td>$96,000</td>
<td>YES</td>
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<tr>
<td>Item</td>
<td>Benefit</td>
<td>Tx-CHPS A/E or 3rd Party Costs</td>
<td>LEED A/E or 3rd Party Costs</td>
<td>Construction Cost</td>
<td>Per Project Cost</td>
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<td></td>
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<tr>
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</tr>
<tr>
<td>Construction Waste Management</td>
<td>Diverts construction waste from landfill disposal</td>
<td>Minimal</td>
<td>Minimal</td>
<td>$130,000</td>
<td>(Prerequisite)</td>
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<td></td>
<td></td>
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<tr>
<td>Construction Indoor Air Quality Management (Building Flush)</td>
<td>Reduces/Removes indoor pollutants prior to occupancy</td>
<td>$1,200</td>
<td>0</td>
<td>$20,000</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>School Garden</td>
<td>Provides Teaching Tool/Learning Opportunities</td>
<td>Minimal</td>
<td>Minimal</td>
<td>$8,000</td>
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<td></td>
<td></td>
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<tr>
<td>TX-CHPS Mural &amp; Educational Display</td>
<td>Ties Sustainable Building Design and Construction Practices to Curriculum</td>
<td>$6,400</td>
<td>0</td>
<td>$11,000</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Acoustic Performance</td>
<td>Ensures spaces meet National Acoustic Standards;</td>
<td>$36,000</td>
<td>$36,000</td>
<td>$60,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use Forest Stewardship Council Certified Wood</td>
<td>Encourages Sustainable Forestry Practices</td>
<td>Minimal</td>
<td>Minimal</td>
<td>$40,000</td>
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<tr>
<td>Superior Energy Performance</td>
<td>Energy Savings (Folks: $64,000/yr.,) reduces resource use</td>
<td>$18,200*</td>
<td>$18,200*</td>
<td>$30,000*</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Enhanced HVAC Filtration</td>
<td>Reduces indoor pollutants</td>
<td>Minimal</td>
<td>Minimal</td>
<td>$10,000</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Collection and Storage of Recyclables – Provide locations and storage areas</td>
<td>Provides recycling facilities for the school and community; reduces landfill disposal</td>
<td>$1,200</td>
<td>0</td>
<td>$5,000</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Plumbing and Irrigation Systems</td>
<td>Reduces Water usage and cost</td>
<td>$5000</td>
<td>$5000</td>
<td>$13,000</td>
<td></td>
<td></td>
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<tr>
<td>Additional Facility/Staff Training and Manual</td>
<td>Increases staff knowledge of CHPS features, efficacy of building/system components</td>
<td>$6,500</td>
<td>$6,500</td>
<td>$10,000</td>
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<td></td>
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<tr>
<td>Building Benchmarking</td>
<td>Verifies that the building is performing as designed, maximizes efficiency</td>
<td>$5,500</td>
<td>$5,500</td>
<td>Minimal</td>
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<td>Compiles Documentation and Submittal</td>
<td>$30,000</td>
<td>$75,000</td>
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<tr>
<td>Registration / Review</td>
<td>Verifies Project meets Program Criteria</td>
<td>$900</td>
<td>$12,000</td>
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</tbody>
</table>

* Estimated to exceed Prerequisite by 2-5 points

| Est. Total – TXCHPS - Designed                     | 105,500                      | $337,000                     | $442,500                     |
| Est. Total – LEED – Certified                      | 158,200                      | $337,000                     | $495,200                     |

* 3rd Party Fees Shown in Red
## Cost / Benefit Analysis Summary

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<tr>
<th>Item</th>
<th>Benefit</th>
<th>Tx-CHPS A/E or 3rd Party Costs</th>
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| Est. Total – TXCHPS - Designed | $105,500 | $337,000 | $442,500 |

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| Est. Total – LEED – Certified | 158,200 | $337,000 | $495,200 |
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1. **Update to TX-CHPS 2015 Designed** *(Design Team Verified)*
   - Likely will meet **TX-CHPS Designed Status**
   - Cost: Approximately $450,000-$500,000
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   - Cost: Approximately $500,000-$550,000
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   - Likely will meet **Certification Status**
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3. **Discontinue Certification Program** *(No Verification Process)*
   - Rely on Building Codes and NISD Standards to insure energy efficient, durable schools
   - Select High Performance Items to Include Each School
   - Cost Dependent on High Performance Items Selected
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4. **Develop a Unique NISD High Performance School Criteria**
   - Conduct detailed study of NISD’s goals
   - Model system determined by NISD priorities
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1. Update to TX-CHPS 2015 Designed *(Design Team Verified)*
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   - Conduct detailed study of NISD’s goals
   - Model system determined by NISD priorities
Northside ISD High Performance School Criteria:

*Design a Sustainable Building Criteria that is the best fit for Northside ISD*

*Design a Criteria that best represents the goals of the Northside Community*

- School Board & Building Committee
- Superintendent
- Cabinet Level Administrators as Applicable
- Facilities, Operations, & Maintenance Leaders
- Energy Management
Design a Sustainable Building Criteria that is the best fit for Northside ISD

Design a Criteria that best represents the goals of the Northside Community

School Board & Building Committee
Superintendent
Cabinet Level Administrators as Applicable
Facilities, Operations, & Maintenance Leaders
Energy Management

Design a system that is flexible and accommodates changes in future building codes and requirements
Northside ISD High Performance School Criteria:

**Design a Sustainable Building Criteria that is the best fit for Northside ISD**

**Design a Criteria that best represents the goals of the Northside Community**
- School Board & Building Committee
- Superintendent
- Cabinet Level Administrators as Applicable
- Facilities, Operations, & Maintenance Leaders
- Energy Management

**Design a system that is flexible and accommodates changes in future building codes and requirements**

**Design a system that encourages High-Performance Design & Construction**
Northside ISD High Performance School Criteria:

Current Status:

NISD Assistant Superintendent for facilities and Operations to form a Committee that will determine NISD Goals for:

- High Performance Buildings
- Educational Environments
- Environmental Stewardship

Begin to Create a NISD Specific High Performance Building Criteria

- Choose Items based on best fit for NISD
- Create a Simplified Checklist
- Determine Verification Process
- Submit Documentation to NISD with Closeout Documentation
- Cost Dependent on High Performance Items Selected and Verification Process
Thank You