Investing in Environments for Teachers, Students and Staff

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Do Today Right!

THE LONG-VIEW STRATEGY:

West Aurora Case Study

Angie Smith, Ed.D.

West Aurora School District 129

- Responsible for Finances, Operations, Facilities and Transportation
- Former School Board Member of West Aurora School District

Notable Experience

- Assistant Superintendent for Operations - West Aurora School District 129
- Assistant Superintendent for Finance - Plainfield Community Consolidated School District #202
- Director of Business Services - Community Unit School District 308
- Vice President and Trust Officer - Castle Bank

Other Activities

- IASBO –Vice-Chair Sustainability PDC
- Governors Taskforce for Financial Empowerment
- Treasurer for WCSIT

ANGIE SMITH
Assistant Superintendent for Operations and CSBO, WASD 129

Patrick Callahan

StudioGC architecture + interiors

- Company founded September 1992
- Office in Chicago, IL
- Full Service Architectural and Educational Planning Firm

Notable Experience

- Served 75 Illinois school districts
- Accredited Educational Facility Planners
- Also serving public libraries, municipalities, federal and commercial clients.

Other Activities

- Association of Learning Environments - Accredited Learning Environment Planner (ALEP)
- Licensed Architect in Illinois and 15 states
- Member of U.S. Green Building Council (USGBC)

PATRICK CALLAHAN
Managing Principal, StudioGC

Brian Rominski

PathoSans

- Company founded 2005, 1st patent established in 2008
- Office in Glendale Heights, IL
- Industry leaders in Electrochemically Activated Solutions (ECAS)

Notable Experience

- Served as Director of Buildings and Grounds in multiple IL school districts
- Project manager for Full Service Architectural and Educational Planning Firm

Other Activities

- CPS and CPMM certified
- IASBO member and contributor
- Member Illinois Green Schools Project, Association for Facilities Engineering, CASBO (California)

Brian Rominski
Strategic Account Manager, PathoSans

Agenda

- Introductions
- Benefits of Sustainability beyond Savings
- Building Certification
- Available Certification Options
- WELL Building
- Questions

WA Case Study: Phased Approach

Geothermal

Convert 12 Building to Geothermal Heating and Cooling

Electric Driver's Ed Cars

Reduce program costs by investing in electric vehicles for Driver's Education

Conservation

Invest in dishwashers at all food service areas and compactors to reduce waste and hauling costs

Leverage Rebate programs to retrofit 19 facilities to LED lighting including exterior fixtures

LED Lighting

Roof Mounted Solar

Utilize IL Solar for all Program for long-term utility reduction with rooftop solar.

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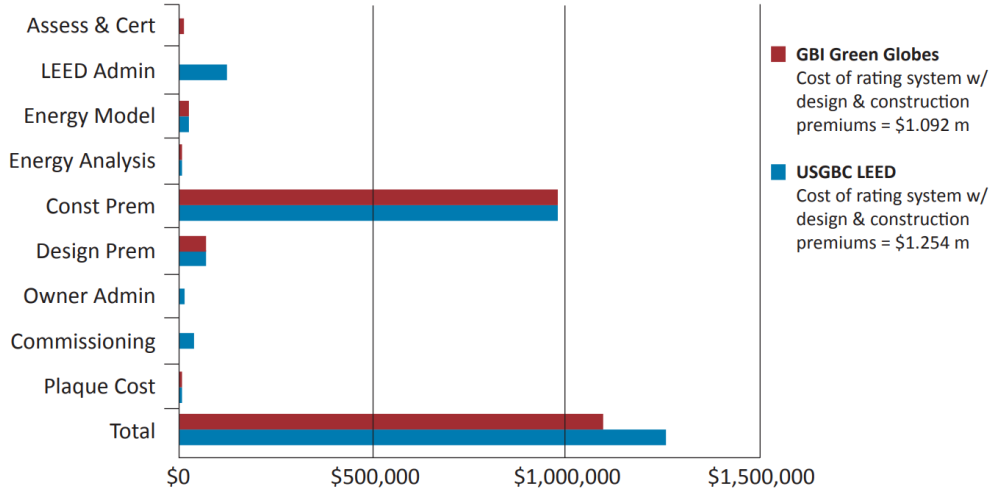
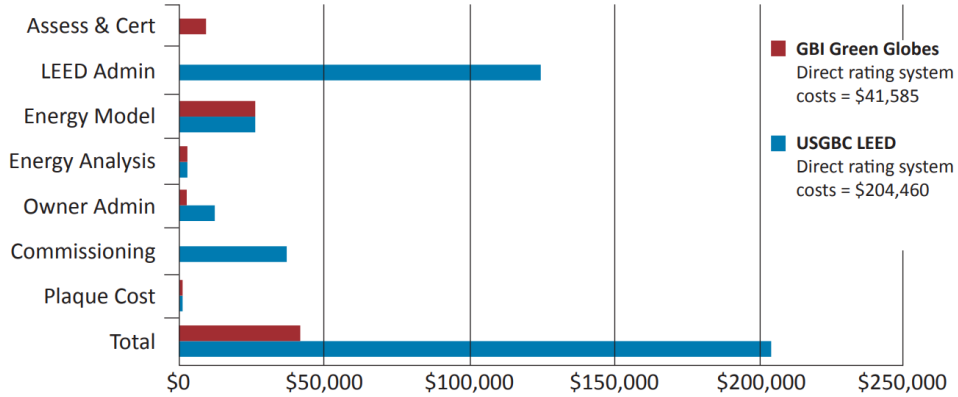
Project rating system cost comparison

Inclusive of estimated design and construction cost premiums for Drexel's Papadakis building



Direct cost comparison of LEED and Green Globes rating systems

Does not include design and construction cost premiums for Drexel's Papadakis building



GREEN GLOBES RATINGS:

After the final assessment is verified by a third party, properties achieving a score of 35% or higher receive a Green Globes rating based on the percentage of total points achieved (up to 1000).

85-100%

FOUR GREEN GLOBES

Demonstrates world-class leadership in resource efficiency, reducing environmental impacts, and improving occupant wellness.

70-84%

THREE GREEN GLOBES

Demonstrates outstanding success in resource efficiency, reducing environmental impacts, and improving occupant wellness.

55-69%

TWO GREEN GLOBES

Demonstrates significant achievement in resource efficiency, reducing environmental impacts, and improving occupant wellness.

35-54%

ONE GREEN GLOBES

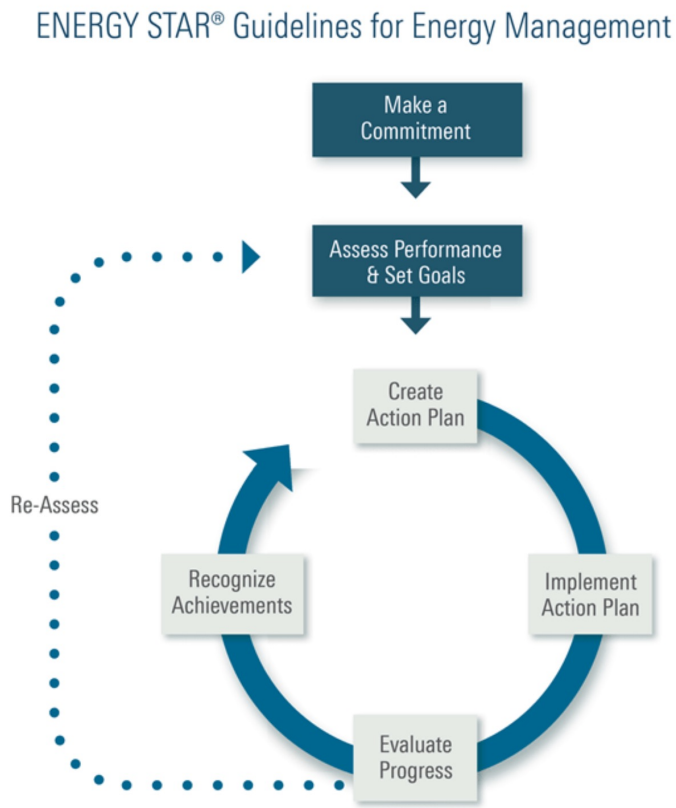
Demonstrates a strong commitment to resource efficiency, reducing environmental impacts, and improving occupant wellness.

Drexel study 031914.indd (thegbi.org)

A 7-Step Road Map

EPA developed the Portfolio Manager Technical Reference series to provide a detailed and transparent look at the methodologies, analyses, and calculations that underpin the metrics available to use Portfolio Manager to get certified.

- Portfolio Manager Technical Reference: ENERGY STAR Score for details about how the ENERGY STAR score is developed and calculated
- Portfolio Manager Technical Reference: Climate and Weather for an in-depth explanation of how Portfolio Manager accounts for the climate of your region and annual fluctuations in weather
- Portfolio Manager Technical Reference: Thermal Conversion Factors for the calculations used to convert the energy data you enter into standard units (either kBtu or GJ)
- The difference between source and site source energy for an explanation of why EPA recommends source energy for national median benchmarks and for the 1-100 ENERGY STAR score
- ENERGY STAR score details by property type for more information on the specific data analysis and methodology used to calculate an ENERGY STAR score for each available property type



The ENERGY STAR Guidelines contain a step-by-step road map for continuous improvement, based on best practices from the nation's leaders in energy management. The document is broken out into seven steps:

- Step 1: Make Commitment
- Step 2: Assess Performance
- Step 3: Set Goals
- Step 4: Create Action Plan
- Step 5: Implement Action Plan
- Step 6: Evaluate Progress
- Step 7: Recognize Achievements

INTERNATIONAL WELL BUILDING INSTITUTE™

30,488 projects encompassing over 2.93 billion square feet are applying WELL across 98 countries.

A comprehensive approach to well-being

Spanning **108 features and 10 concepts**, WELL is a roadmap for improving the quality of our air, water and light with inspired design decisions that not only keep us connected but facilitate a good night's sleep, support our mental health and help us do our best work everyday.

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	LEED	GREEN GLOBE CERTIFIED	ENERGY STAR	INTERNATIONAL WELL BUILDING INSTITUTE™
Sponsoring Agency	**USGBC** US Green Building Council	**GBI** Green Building Initiative	**EPA** US Environmental Protection Agency	**IWBI** International Well Building Institute
Process	start in early design (integrative process); In-depth submittal, verification by USGBC; option for existing Building option (O+M)	begin up to 18mo after occupancy; existing building option	Online process; annual cert/verification on actual energy use; option for "Design to Earn"	In-depth submittal, verification and site visit by IWBI.
Certifying authority	USGBC	GBI	Independent Third-Party selected by Owner	IWBI
Levels of Certification	40 to 80 points of 110 Basic, Silver, Gold, Platinum	Green Globes score of 245 to 1,000	Energy Star score of 75 to 100 (% of target)	4 levels based on Optimizations: Bronze, Silver, Gold, Platinum
Cost of Certification	approx **$200,000** admin, fees and charges	approx **$40,000** admin, fees and charges	approx **$10,000** admin, fees and charges	approx **$100,000** admin, fees and charges
Construction Cost Impact	**$$$$**	**$$$$**	**$**	**$$$**

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THE WELL BUILDING STANDARD™

SEVEN CONCEPTS FOR HEALTHIER BUILDINGS

The WELL Building Standard is the culmination of over eight years of rigorous research in collaboration with leading physicians, scientists, and industry professionals. Looking beyond building sustainability, WELL focuses on the people and how the built environment can improve the Health and Wellness of the individuals who use them.

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LIGHT FEATURE LEVEL MATRIX

	Core and Shell	New and Existing Interiors	New and Existing Buildings
53 VISUAL LIGHTING DESIGN			
1: Visual Acuity for Focus	-	P	P
2: Brightness Management Strategies	-	P	P
54 CIRCADIAN LIGHTING DESIGN			
1: Melanopic Light Intensity for Work Areas	-	P	P
55 ELECTRIC LIGHT GLARE CONTROL			
1: Lamp Shielding	-	P	P
2: Glare Minimization	P	P	P
56 SOLAR GLARE CONTROL			
1: View Window Shading	O	P	P
2: Daylight Management	O	P	P
57 LOW-GLARE WORKSTATION DESIGN			
1: Glare Avoidance	-	O	O
58 COLOR QUALITY			
1: Color Rendering Index	-	O	O
59 SURFACE DESIGN			
1: Working and Learning Area Surface Reflectivity	-	O	O
60 AUTOMATED SHADING AND DIMMING CONTROLS			
1: Automated Sunlight Control	-	O	O
2: Responsive Light Control	-	O	O
61 RIGHT TO LIGHT			
1: Lease Depth	O	O	O
2: Window Access	-	O	O
62 DAYLIGHT MODELING			
1: Healthy Sunlight Exposure	O	O	O
63 DAYLIGHTING FENESTRATION			
1: Window Sizes for Working and Learning Spaces	O	O	O
2: Window Transmittance in Working and Learning Areas	O	O	O
3: Uniform Color Transmittance	O	O	O

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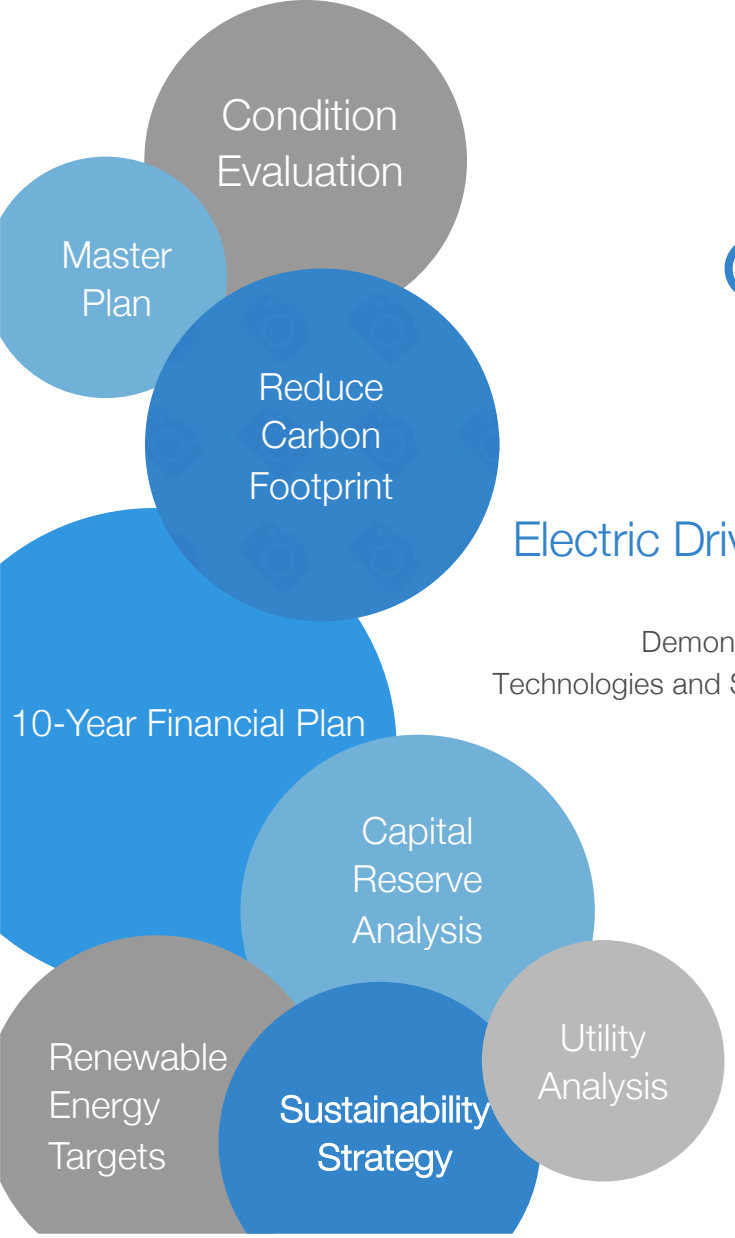
COMFORT FEATURE LEVEL MATRIX

	Core and Shell	New and Existing Interiors	New and Existing Buildings
72 ADA ACCESSIBLE DESIGN STANDARDS			
1: ADA Regulations	P	P	P
73 ERGONOMICS: VISUAL AND PHYSICAL			
1: Visual Ergonomics	-	P	P
2: Desk Height Flexibility	-	P	P
3: Seat Flexibility	-	P	P
74 EXTERIOR NOISE INTRUSION			
1: Sound Pressure Level	P	O	P
75 INTERNALLY GENERATED NOISE			
1: Acoustic Planning	-	P	P
2: Mechanical Equipment Sound Levels	O	P	P
76 THERMAL COMFORT			
1: Ventilated Thermal Environment	P	P	P
2: Natural Thermal Adaptation	P	P	P
77 OLFACTORY COMFORT			
1: Source Separation	-	O	O
78 REVERBERATION TIME			
1: Reverberation Time	-	O	O
79 SOUND MASKING			
1: Sound Masking Use	-	O	O
2: Sound Masking Limits	-	O	O
80 SOUND REDUCING SURFACES			
1: Ceilings	-	O	O
2: Walls	-	O	O
81 SOUND BARRIERS			
1: Wall Construction Specifications	-	O	O
2: Doorway Specifications	-	O	O
3: Wall Construction Methodology	-	O	O
82 INDIVIDUAL THERMAL CONTROL			
1: Free Address	-	O	O
2: Personal Thermal Comfort Devices	-	O	O
83 RADIANT THERMAL COMFORT			
1: Lobbies and Other Common Spaces	O	-	O
2: Offices and Other Regularly Occupied Spaces	-	O	O



Geothermal

Seasonal Thermal Comfort and Improved Air Quality in All Buildings

Electric Driver's Ed Cars

Demonstrating New Technologies and Sustainability

LED Lighting

Occupant Visual Comfort and Color Temperature for Learning Environments

Conservation

Reduce Carbon Footprint and Waste Volume

Roof Mounted Solar

Use Savings to Fund Programs and Projects to Obtain Objectives.

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Focus on Targets

53. Visual Lighting Design – ***Special Needs***
54. Circadian Lighting Design – ***Special Needs***
55. Electrical Lighting Glare Control - ***Everyday***

75. Internally Generated Noise – ***Unit Selection***
76. Thermal Comfort – ***Heat/Cool***
77. Olfactory Comfort - ***Mildew***

82.Individual Thermal Comfort - ***Anytime***

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The Master Plan with a **Phased** Approach

LED LIGHTING CONVERSION	20 Buildings	Replaced interior and exterior light fixtures over a 6-year period in all buildings
GEOTHERMAL CONVERSION	10 Buildings	Replaced aging heat only infrastructure with heat and cool geothermal with utility reductions
ELECTRIC CARS	4 Cars	Replaced our fossil fuel fleet to electric to help reduce emissions and program operational costs
DISH WASHERS	15 Sites	Reduced overall expenses by adopting a “reuse” program to reduce landfill waste and purchase of biodegradables
TRASH COMPACTORS	17 Sites	Reduced our overall expenses by reducing our refuse collection to once a week per site.

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Do Today Right!

The Master Plan with a **Phased** Approach

LED LIGHTING CONVERSION	$120K/year	Replaced interior and exterior light fixtures over a 6-year period in all buildings
GEOTHERMAL CONVERSION	$400K/year	Replaced aging heat only infrastructure with heat and cool geothermal with utility reductions
ELECTRIC CARS	$5K/year	Replaced our fossil fuel fleet to electric to help reduce emissions and program operational costs
DISH WASHERS	$50K/year	Reduced overall expenses by adopting a “reuse” program to reduce landfill waste and purchase of biodegradables
TRASH COMPACTORS	$75K/year	Reduced our overall expenses by reducing our refuse collection to once a week per site.
PHOTOVOLTAICS	$170K/year	Reduced our carbon footprint and utility expenses

$820K per year in savings shifted to Capital Projects

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Geothermal Utility Savings @ Start-up

Utility Rates Used At Time of Design

0.0819 kWh
0.0779 Therm

School	Building Type	Building Square Footage	Gas Therm Savings	Gas Savings @ Today's Rate	Effective Utility Savings w Air Conditioning	Total Estimated Construction Costs
Goodwin	Elementary	47,795	23,050	$14,982.50	($30,335.57)	$ 1,445,877
McCleery	Elementary	50,625	23,617	$15,351.35	($32,035.32)	$ 1,531,490
Schneider	Elementary	53,228	25,037	$16,273.83	($37,257.92)	$ 1,610,235
Hall	Elementary	54,980	22,247	$14,460.31	($34,579.26)	$ 1,663,235
Hill	Elementary	43,238	28,167	$18,308.49	($24,526.67)	$ 1,929,138
Nicholson	Elementary	35,230	2,678	*$1,740.93*	*$18,873.21*	$ 1,134,008
Freeman	Elementary	50,643	25,399	$16,509.66	($32,046.13)	$ 1,532,034
Jefferson	Middle	98,598	54,420	$35,373.14	($65,014.88)	$ 2,982,751.64
Washington	Middle	99,708	34,422	$22,374.56	($59,018.61)	$ 2,982,751.64
West High School	Senior High	498,219	80,399	$52,259.06	($102,000.00)	$ 8,419,435.20
				$207,633.83	**($397,941.15)**	**$ 23,301,817**

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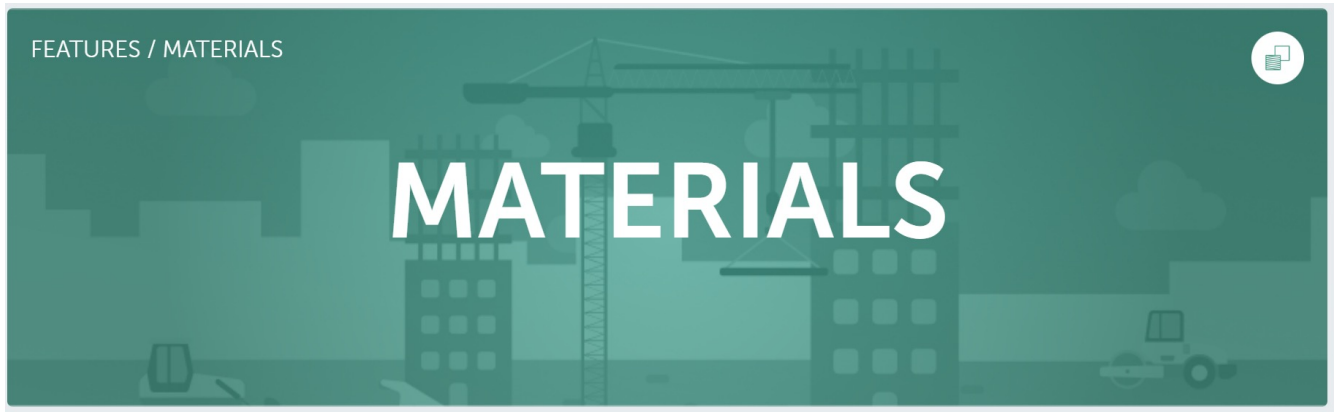
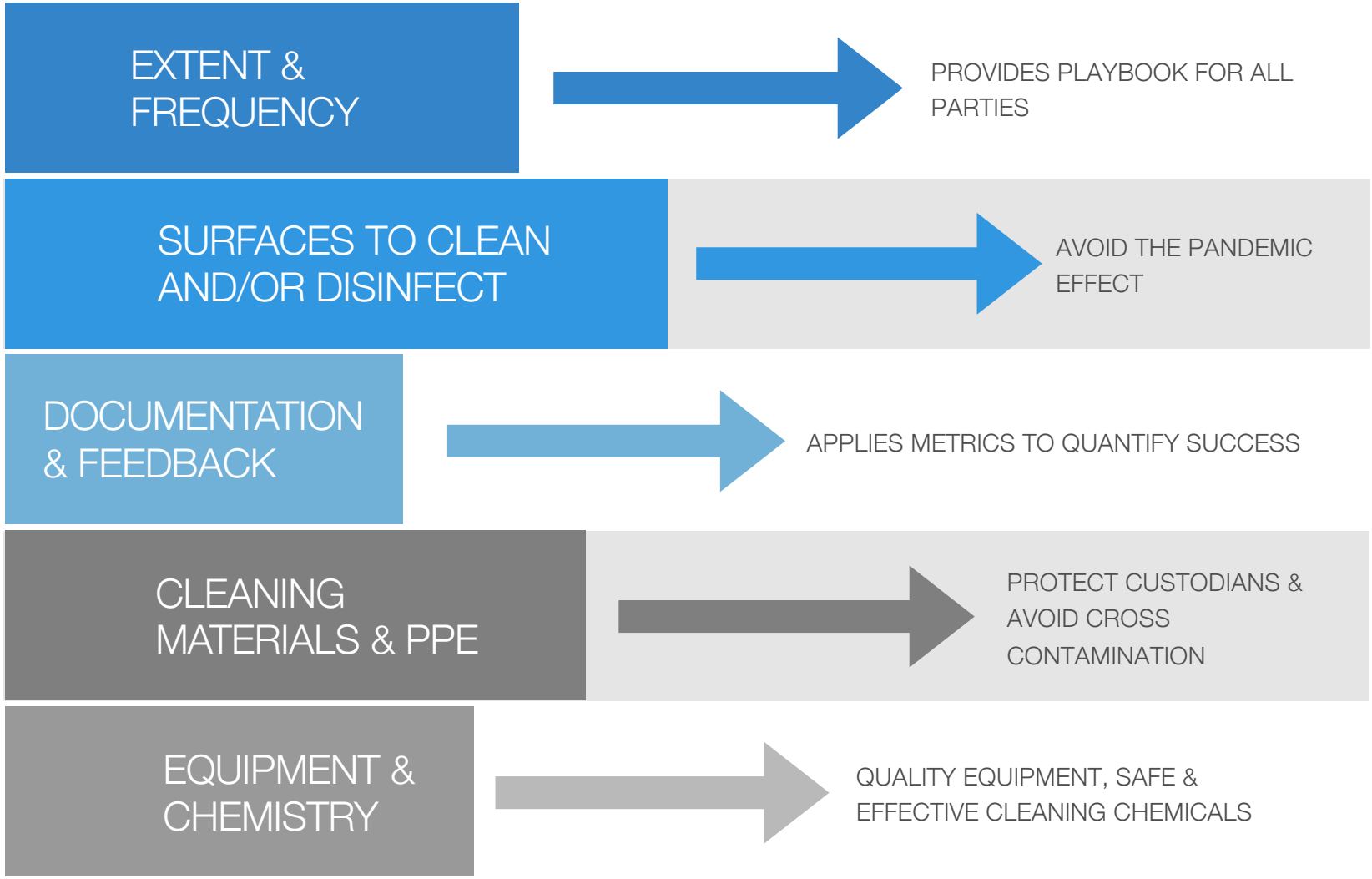
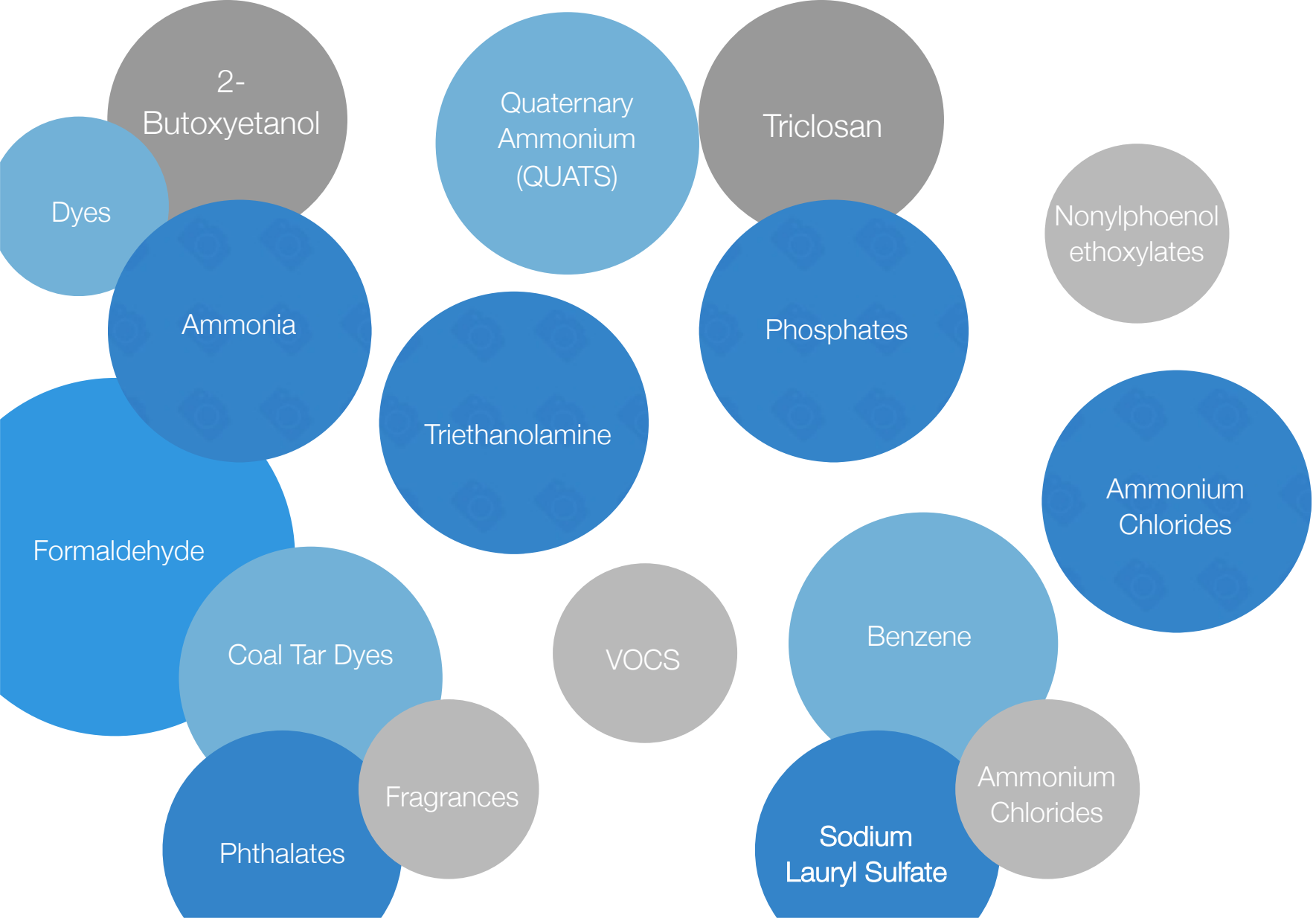


The WELL Materials concept aims to reduce human exposure, whether direct or through environmental contamination to chemicals that may impact health during the construction, remodeling, furnishing, and operation of buildings.



"A comprehensive housekeeping program provides a framework for expectations and quality control, eliminates damage to interior surfaces, but more importantly protects custodians, teachers, and students from exposure to pathogens, toxic chemicals, and allergens"



Toxins in Cleaning Chemicals

In a Common School Disinfectant !

Chemical name	CAS-No.	Concentration (%)
Alkyl (50% C14, 40% C12, 10% C16) dimethyl benzyl ammonium chloride	68424-85-1	3
Octyl decyl dimethyl ammonium chloride	32426-11-2	2.25
ethanol	64-17-5	1 - 5
Didecyl Dimethyl Ammonium Chloride	7173-51-5	1.35
Dioctyl dimethyl ammonium chloride	5538-94-3	0.9

Experience with human exposure

Product AS SOLD

Eye contact	:	Redness, Pain, Corrosion
Skin contact	:	Redness, Pain, Corrosion
Ingestion	:	Corrosion, Abdominal pain
Inhalation	:	Respiratory irritation, Cough

Product AT USE DILUTION

Eye contact	:	Redness, Irritation
Skin contact	:	No symptoms known or expected.
Ingestion	:	No symptoms known or expected.
Inhalation	:	No symptoms known or expected.

Eye protection	:	Wear eye protection/ face protection.
Hand protection	:	Wear the following personal protective equipment: Standard glove type. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Skin protection	:	Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing
Respiratory protection	:	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Wash face, hands and any exposed skin thoroughly after handling. Provide suitable facilities for quick drenching or flushing of the eyes and body in case of contact or splash hazard.

Product AS SOLD

Hazard pictograms :

Signal Word	:	Danger
Hazard Statements	:	Harmful if swallowed. Causes severe skin burns and eye damage.
Precautionary Statements	:	**Prevention:** Wash skin thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/ protective clothing/ eye protection/ face protection. **Response:** IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor. IF IN EYES: Rinse cautiously with water for

The Master Plan with a **Phased** Approach

PHASE 1
INTRODUCED ECAS TECHNOLOGY

$75K/year

Replaced disposable disinfecting wipes with sustainable cleaning chemistry

FUTURE PHASE 2 – PUSH ECAS TECHNOLOGY DISTRICT WIDE

Estimated $50K/year

Replaced traditional cleaning chemistry with ECAS technology

Staff and Student Safety

Reduced Plastic and Cardboard Waste

Positive Impact to IAQ

$125K per year in savings shifted to other needs

Questions and Answers

We thank you for your time!

West Aurora School District 129

STUDIO GC architecture + interiors

PATHOSANS

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Presenters:

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