

Building Resiliency

Everyone can drive the discussion for environmental stewardship.

May 4, 2023

Presented by:

Lyndl Schuster: *CSBO, River Trails SD26*

Dan Whisler: *Director of Buildings and Grounds, River Trails SD26*

Eric Miller: *CSBO, Glenview SD34*

Troy Kerr: *Vice President, FGM Architects*

Lynne Sorkin: *Principal, FGM Architects*

Moderator:

Brian Scully: *DLA*



 #iasboAC23



- 1. Understanding Resiliency**
- 2. Emergency Preparedness / Catastrophic Event Recovery**
- 3. Leveraging Investments / Partnerships**
- 4. High Performance Buildings**
- 5. Net Zero Case Study**
- 6. What Steps Can You Take in Your Next Project**
- 7. Green Ribbon Schools**
- 8. Key Resiliency Questions to Get Started**
- 9. Additional Resources**



1. Understanding Resiliency

“Change is coming by design or disaster...we have to leave our comfort zone”

Jane Fonda (actress & climate activist)



Buildings, communities and the **environment** have been increasingly subjected to destructive forces from both natural and human-created hazards

Global initiatives are currently not tracking fast enough to address global warming projections

1. Understanding Resiliency

Resisting Shocks and Stresses from Environmental and Social Changes

Sustainable buildings are only part of the solution. There is somewhat limited impact when facilities are in vulnerable communities

Hazard Multipliers

Many hazards trigger additional problems. A big rain, causes flash flooding, which in turn causes a power outage and contaminated drinking water.

Design for Interdependence

Planning for buildings, infrastructure, utilities, food supply and services are all necessary



Rockwood Eureka High School, Eureka, MO 2016

1. Understanding Resiliency

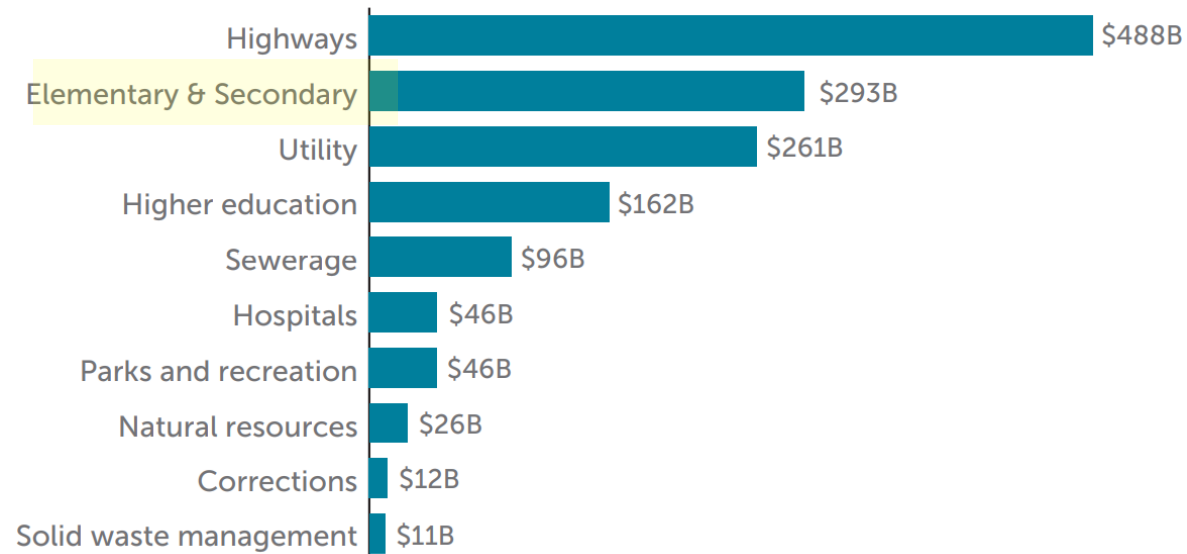
How does resiliency relate to schools?

- With nearly **100,000 public schools**, the education sector can be key to helping communities address and adapt to **climate change**.
 - Each school has a substantial **carbon footprint**
 - Sector is one of the largest consumers of **energy** with 50M students and 6M adults using public buildings
 - Collectively schools operate one of the largest **mass transit fleets** in the country
- Threats of climate change, environmental degradation, population growth will increasingly impact education.



1. Understanding Resiliency

Schools are the 2nd largest Infrastructure Sector for State and Local Capital Outlay



Data Source: F-13 State Fiscal Survey of U.S. Census of Governments FY2014-2018, in actual \$.

National Status of our schools

- Massive Inventory: 8.1B Gross SF as of 2021
- 2 Million Acres of Land
- Half of school buildings are at least 50 years old
- Use 70% of US electricity
- Generate 40% of carbon emissions
- 480,000 buses
- Serve over 7B meals annually, generating 530K tons of food waste

1. Understanding Resiliency

How do we plan for Resilient and Climate-Adaptive Design?

- **Understand risks and vulnerabilities** that people and the built environment are susceptible to encountering
- **Adapt:** Accommodate for changing physical, economic and social needs through durable and flexible design
- **Mitigate negative impacts** to reduce loss and injury



Westbrook Elementary School Storm Shelter, Glenview SD34

1. Understanding Resiliency

Changes in planning and modest increases in budgets yield many benefits:

- ☛ Stormwater management & greening of schoolyards
- ☛ Reduced Embodied Carbon
- ☛ Healthier materials selections Clean Energy & Reduced Grid Dependency
- ☛ Electric vehicle fleets
- ☛ Improved air quality
- ☛ Safe drinking water
- ☛ Enhanced Durability
- ☛ Flexibility of Everyday Use
- ☛ Operations during emergencies
- ☛ Ability to bounce back from crises



Prairie Trails Net Zero Elementary School, Glenview, IL

2. Emergency Preparedness & Catastrophic Event Recovery

“Disaster Recovery from tornado was a marathon”



The NIST investigation into the Joplin, Mo., tornado was the most comprehensive scientific investigation of a tornado in history.

\$2.8 billion
Total damages;
costliest tornado
event in U.S. history

84%
Of deaths resulted
from building and
structural failures

25%
Of Joplin destroyed

322+
Kilometers per
hour wind speed.
This earned the
tornado the most
powerful ranking on the
Enhanced Fujita scale.

161
People were
killed; this was the
single deadliest
tornado in the U.S.
since official record
keeping began in
1950.

8,000
Structures were lost

75%
Of Joplin suffered damage

16
Recommendations were
made by NIST, focusing on
saving lives and property
and making communities
more resilient.

Joplin MO, Hope High School

2. Emergency Preparedness & Catastrophic Event Recovery

Compare Risk Reduction Benefits to Costs of Addressing the Risks of Hazards

FEMA Benefit-Cost Analysis:

1. What problem are we trying to solve by planning for adaption?
2. What is the reference situation?
3. What are the positive and negative impacts of implementing adaption compared to the potential situation?
4. Is the project robust and flexible?
5. Will the project add social and environmental value?



2. Emergency Preparedness & Catastrophic Event Recovery

NFPA 909: Threats Assessment Checklist

Unintentional Act

- Fire/explosion
- Health emergency
- Hazardous material spill
- Transportation accident

Intentional Act

- Terrorism
- Cyber attack
- Arson
- Theft
- Vandalism
- Sabotage
- Civil disturbance, public unrest, mass hysteria, riot
- Strike

System Failure

- Loss of electricity
- Water leak
- Building collapse/structural failure
- Fuel shortage
- Communications system interruption
- Air/water pollution contamination
- Water control structure, dam or levee failure
- HVAC system failure
- Loss of protection systems

Geological

- Earthquake
- Tsunami
- Volcano
- Landslide/Mudslide

Biological

- Pandemic disease
- Animal or insect infestation

Meteorological

- Flood, flash flood, tidal surge
- Drought
- Wildfire
- Snow, ice, hail, sleet, avalanche
- Windstorm, tornado, water spout, dust/sandstorm
- Extreme heat/cold
- Lightning

2. Emergency Preparedness & Catastrophic Event Recovery

Public Schools are Hubs of the Community

Key Considerations

- ✓ Plan with and for the community
- ✓ Locate and build to be less vulnerable to extreme weather
- ✓ Modernize or replace existing infrastructure
- ✓ Build safe rooms with independent ventilation systems
- ✓ Incorporate on-site renewable energy



West Florida High School

Your Stories



 #iasboAC23

 Do Today **Right!**

2. Emergency Preparedness & Catastrophic Event Recovery

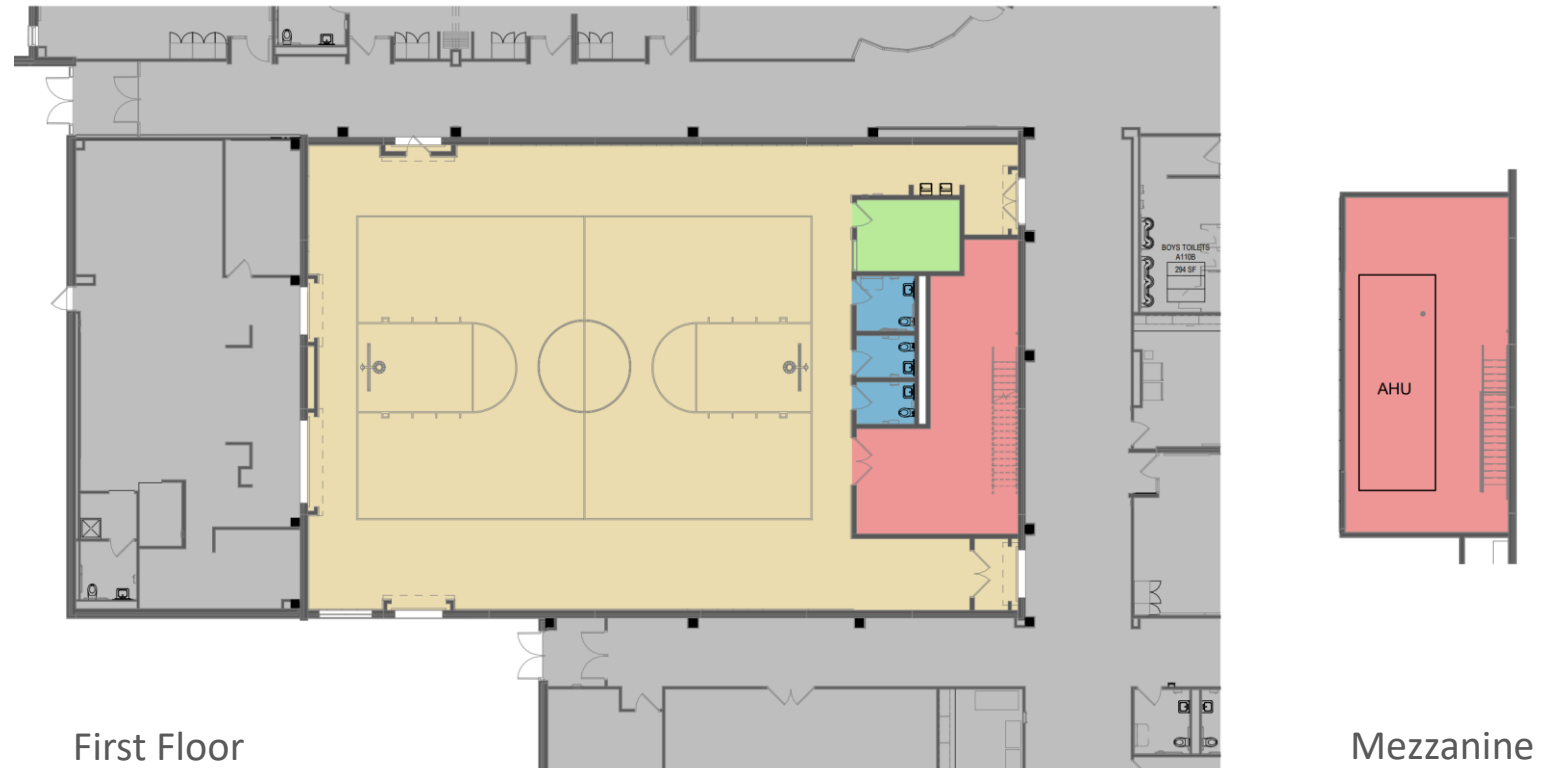
Storm Shelter: Glenview SD34, Westbrook Elementary School



2. Emergency Preparedness & Catastrophic Event Recovery

Storm Shelter: Glenview SD34, Westbrook Elementary School

- Follow provisions of the ICC/NSSA Standard for Design and Construction
- Applies to new school building with an occupant load of 50 or more
- One or more additions to an existing school building completed within a period of 24 months that increases the total SF of the facility by 50% or more
- Must have sufficient capacity to serve both the addition(s) and the existing building



2. Emergency Preparedness & Catastrophic Event Recovery

Emergency Power

Emergency generators

- Lighting
- Exit signs
- Communications
- Command Center
- Fire Alarm equipment
- Coolers and Freezers

Manual transfer switch

- Portable Generator
- Lights and heating at gyms, locker rooms kitchen, cafeteria maintenance
- Kitchen equipment

UPS

- Short term battery
- Automatic



2. Emergency Preparedness & Catastrophic Event Recovery

Stormwater Management: Glenview SD34 Westbrook Elementary School



2. Emergency Preparedness & Catastrophic Event Recovery

Stormwater Management: River Trails SD26



3. Leveraging Investments / Partnerships

Community Engagement, Grants, Local Investments & Tax Credits

- Develops community attachment to solutions collaboration before & after crises
- Energy Incentives
- Department of Energy Grants
- Department of Justice Grants
- Department of Homeland Security
- Water Reclamation District



Engage Community Needs, Goals & Objectives for deep rooted community attachment to solutions promote coming together after a crisis

3. Leveraging Investments / Partnerships

Electric School Buses

- **Funded by the Illinois EPA** – which will provide our students with transportation and the district with fuel and operational savings.
- Provides the community with lower carbon emissions, elimination of diesel emissions and noise reduction.
- This also included partnering with our transportation company. District owned bus and charger and driver by company.
- **Federal EPA has \$5 billion designated for electric school buses over the next 5 years.** The first half a billion has been distributed but stay tuned for more.



Illinois HB2887 / SB 2154 Proposed Legislation:

- All new school bus purchases and contracts to be electric by 2028
- All school buses operating in equity investment eligible communities to be electric by 2030
- All school buses operating statewide to be electric by 2035

3. Leveraging Investments / Partnerships

Community Access, Programs and Shared Space



Multi-functional Space for Community Use

- Community Meeting space
- Shared Library
- Shared Athletic Space
- Parent Education

Outdoor Facilities

- Community Gardens
- Walking Paths
- Fitness Equipment
- Playgrounds
- Safe Routes

STEM and CTE Programs

- Buildings as teaching tools
- STEM career pathways
- Support Spaces in Crises

Health Centers

- Student and Community Access to crisis & health services.
- Outpost for local hospitals
- CTE Pathway

4. High Performance Buildings

Sustainable Buildings, Sites and Communities

Human Comfort

- Air Quality
- Water Quality
- Light Quality
- Views
- Sound
- Thermal comfort
- Flexibility
- Ergonomics
- Mental Health

Community

- Protect Historical Places
- Light Pollution
- Support Economy
- Social Equity
- Community Input

Site

- Irrigation
- Stormwater Management
- Reduce Heat Island Effects
- Minimize Disturbance
- Conserve Vegetation
- Native Plantings
- On-Site Food Production

Energy Efficiency

- Energy Performance
- Energy Metering
- Commissioning
- On-site Renewables
- Green Power/Carbon Offsets
- Net Zero/Net Positive Programs
- Heat Pumps
- LED Lighting

Water Consumption

- Water Use Reduction
- Water Metering
- Water Treatment
- Rainwater Capture

Material Sustainability

- Demolition waste management
- Life Cycle Reduction
- Materials Sourcing & Declaration

Operations Management

- Training
- Risk Management

4. High Performance Buildings

Building Envelope

Building orientation and envelope

- Windows, walls and roofs account for 30% of the primary energy consumed
- Determine most appropriate façade construction to limit energy needs
- Positioning the building can reduce solar heat gain

Insulation

- Where have we come from?
- Code minimum R20 vs R24 for Net Zero. What is the ROI

Air Barriers

- Avoiding Leaky Buildings
- Maintaining Conditioned Air

Roofing

- Recoating to extend life, reduce costs and waste
- Increase insulation to improve performance of over next 20-30 years
- Green roofs reduce heat island effect

Windows

- Curtainwall performance higher than windows
- Triple pane vs double paned glass



4. High Performance Buildings

Life Cycle Assessment (LCA)

Embodied Carbon

The location of a material or product's extraction and manufacturing can significantly influence the magnitude of its embodied carbon.

Operational Carbon

From building energy consumption



4. High Performance Buildings

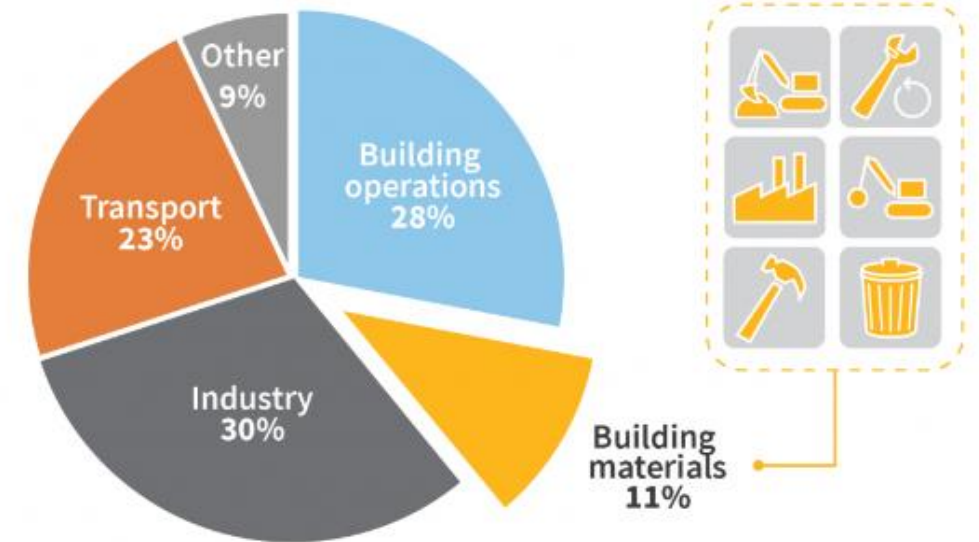
Reducing Embodied and Operational Carbon

Buildings

- Currently responsible for nearly **40%** of energy-related **global greenhouse gas emissions**
- **11% +** resulting from the production of **building materials**
- **28%** resulting from **Building Operations**
- This number is larger when considering non-energy-related emissions from manufacturing of cement, steel, and other construction materials

Public Sector Construction

32% of embodied carbon in US between 2008-2018 was attributed to public projects



Global energy-related CO₂ emissions.
Adapted from the UNEP 2019 Global Status Report

4. High Performance Buildings

Reducing Embodied Emissions

New Buildings

- Design more efficiency and durability
- Provide efficient construction processes & minimize waste
- Minimize energy and emission intensive materials (eg. Aluminum/glass curtainwall)
- Generates 3-5 lbs of waste / SF

Existing Building Renovations

- Reusing/ Repurposing generates 50-75% less waste
- Salvage and recycle materials
- Greatest savings from reusing structure and envelope
- Savings can be upwards of 60-150 lbs of waste/SF

Buy Clean Policy

- Set goals for products with low or no **Global Warming Potential (GWP)**
- Specify products manufactured with renewable energy



4. High Performance Buildings

Healthy Building Materials Selections

Environmental Product Declarations (EPDs)

- 3rd Party Verified Materials Disclosures written in conformance with international standards
- Reports measuring the environmental impacts including embodied carbon.
- Product "Nutrition Labels" Such as Declare provided by International Living Future Institute's (ILFI), Cradle to Cradle, REACH, HML Material Collections
- Identification of ingredients and residuals at or above 100 ppm (0.01%) present in the final product by weight
- HPD – Health Product Declaration identifies product is free of compounds or under thresholds established for safety

Declare.

Product Name
Manufacturer

Final Assembly: First City, State, Country;
Second City, State, Country; Third City, State, Country
Life Expectancy: 50 Years
Embodied Carbon: # kg CO₂-eq ■
Declared Unit: # m²
End of Life Options: Recyclable (95%), Landfill (5%),
Take Back Program (Program Name/Location)

Ingredients:

Your First Component: Sustainably Sourced Ingredient;
LBC Red List Ingredient: Your Second Component;
LBC Watch List Priority for Inclusion: Non-Toxic Ingredient;
Undisclosed (<0.1%)²

¹LBC Temp Exception RL-009 Formaldehyde
²LBC Temp Exception RL-004var.a Proprietary Ingredients

Living Building Challenge Criteria: Compliant

I-13 Red List:
 LBC Red List Free % Disclosed: 99.9% at 100ppm
 LBC Red List Approved **VOC Content:** # g/L
 Declared

I-10 Interior Performance: CDPH Standard Method v1.2-2017
I-14 Responsible Sourcing: Product Available with FSC Chain of Custody

XXX-XXXX
EXP. 01 OCT 2021
Original Issue Date: 20XX

Third Party Verified

MANUFACTURER CLAIMS VERIFIED BY THIRD PARTY VERIFIED ASSESSOR
INTERNATIONAL LIVING FUTURE INSTITUTE™ living-future.org/declare

4. High Performance Buildings

Select Healthy Materials & Avoid Harmful Chemicals

Avoid chemicals in building products **that pose serious risks** to health and the environment

- Materials that should be phased out of production
- Greatest impact if significantly reduced or eliminated
- Environmental Product Declarations identify if any elements from the red list within their “recipe”

The Red List

The Living Building Challenge (LBC) <https://living-future.org/red-list/>

Alykylphenols

Antimicrobials

Asbestos

Bisphenol

California- banned solvents

Chlorinated Polymers

Chlorobenzenes

CFCs and HCFCs

Formaldehyde

HFRs

Organotin Compounds

PFAS / PFCs

PCBs

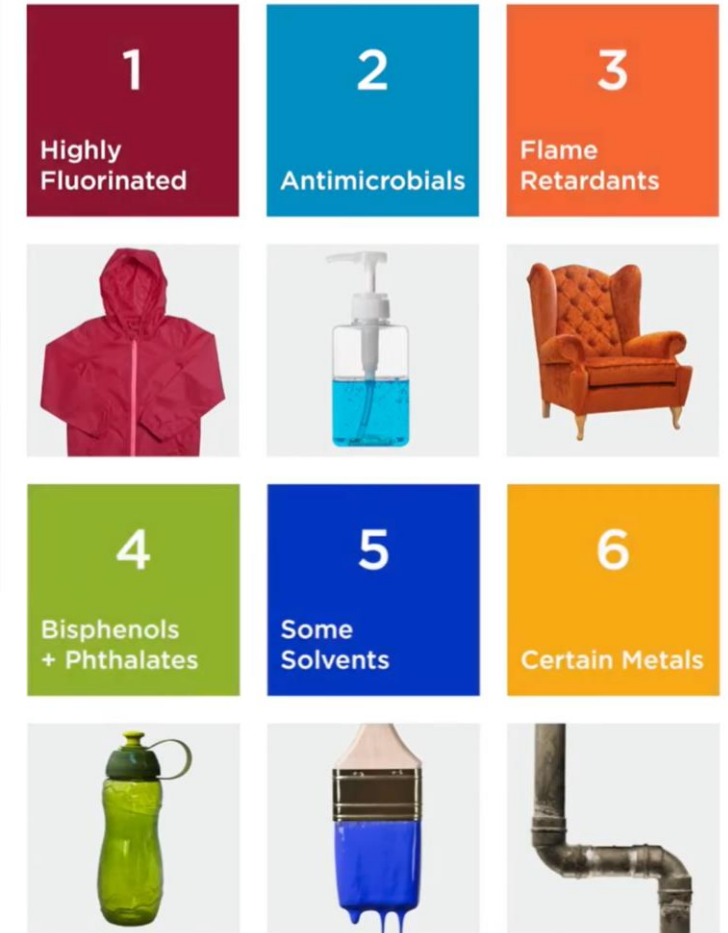
PAHs

Chlorinated Paraffins

Toxic Heavy Metals

VOCs

Creosote/ pentachlorophenol



<https://www.SixClasses.org>



5. Net Zero Case Study

River Trails SD26: Prairie Trails School

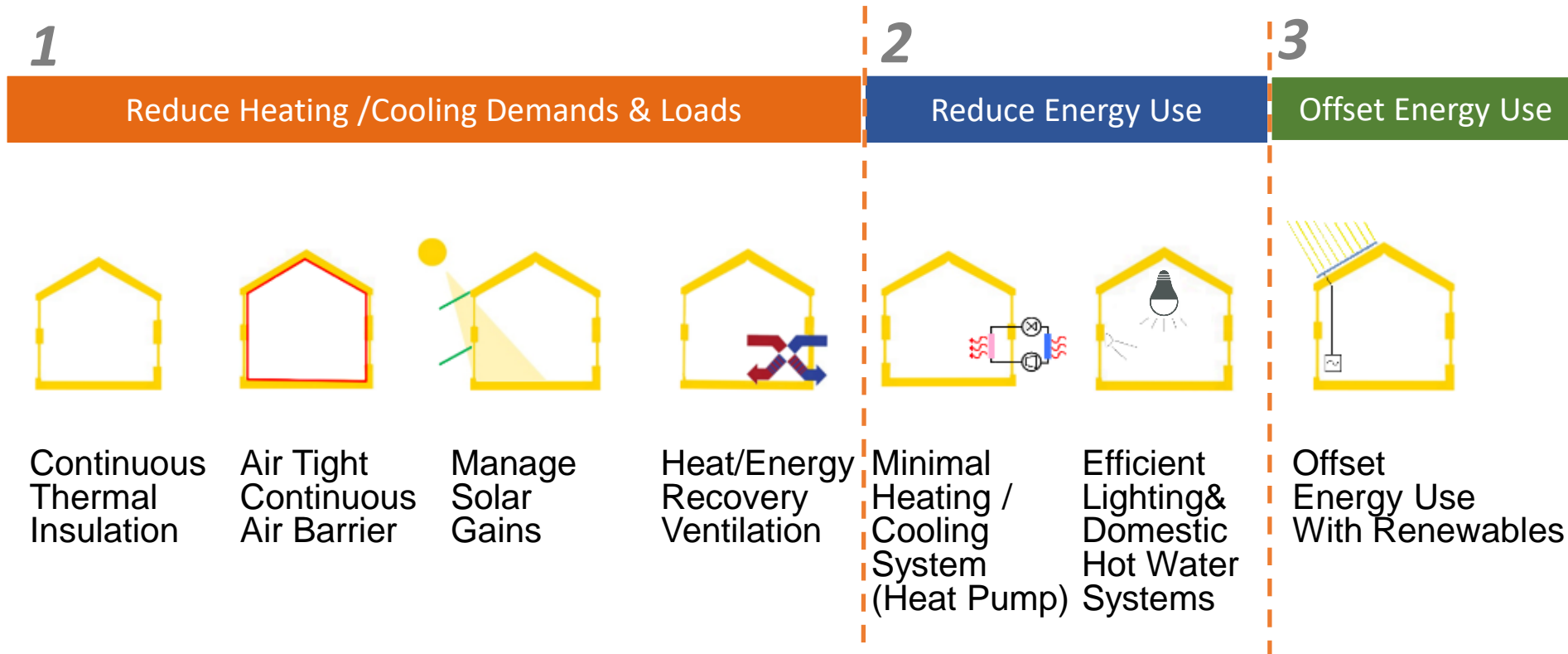


5. Net Zero Case Study

River Trails SD26: Prairie Trails School



Start with *Compact form* then....



5. Net Zero Case Study

River Trails SD26: Prairie Trails School

Performance Highlights

Baseline EUI ASHRAE 90.1	75 kbtu/yr./sf
Target EUI	24-26 kbtu/yr./sf
Baseline Carbon Footprint/Year	174 metric tons
Anticipated Carbon Footprint/Year	-24 metric tons
Carbon Footprint Reduction	100+%
Estimated Annual Energy Savings to District 26	+/- \$30,000/100% cost savings



5. Net Zero Case Study

River Trails SD26: Prairie Trails School



	Existing	Code	Installed Exceeds Code
Wall Insulation	None (Uninsulated)	R-20 (Zone 5)	R-24
Air Barrier	None	0.4 cfm/sq.ft.	0.04 cfm/sq.ft.
Roof Insulation	R-4 (3/4" Rigid Insulation)	R-30	R-65
Window U-Value	None (Single Pane)	U-0.38	U-0.12

5. Net Zero Case Study

River Trails SD26: Prairie Trails School



5. Net Zero Case Study

River Trails SD26: Prairie Trails School

- New solar panel system to produce electricity
 - **New rooftop photovoltaic system to generate on-site renewable energy.**
The annual production target is currently 227.1 MWh, which includes a 15% buffer (grant - 10%)



5. Net Zero Case Study

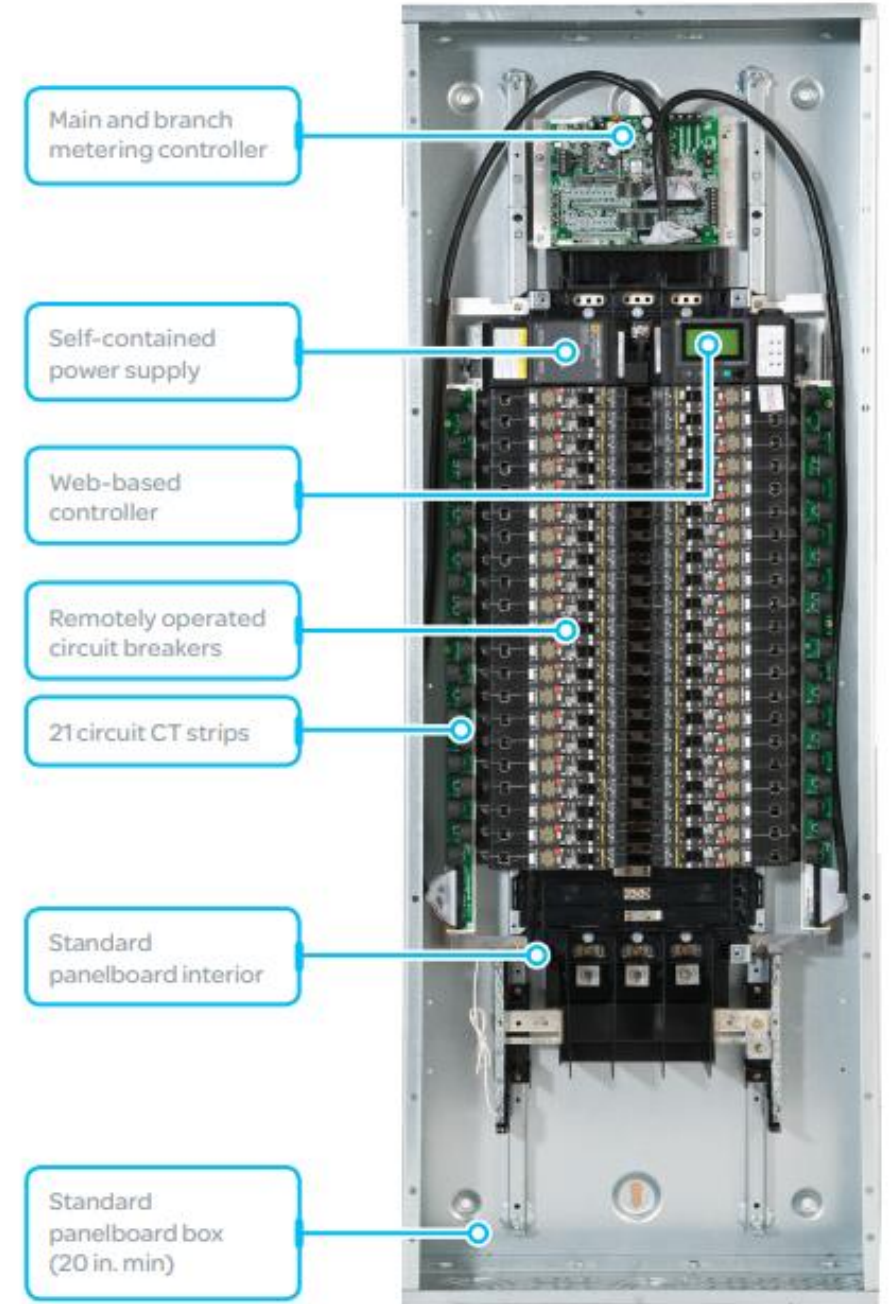
River Trails SD26: Prairie Trails School

Lighting

- All LED Lighting
- All lighting on vacancy sensor or occupancy sensor where possible

Controls & Monitoring

- DHW loop on thermostat-controlled “on demand” system
- Measurement and verification electrical panels for energy monitoring



5. Net Zero Case Study

River Trails SD26: Prairie Trails School

DOAS with VRF System

ECM Motor Fan

Electronically Commutated Motor

Energy Recovery Wheel

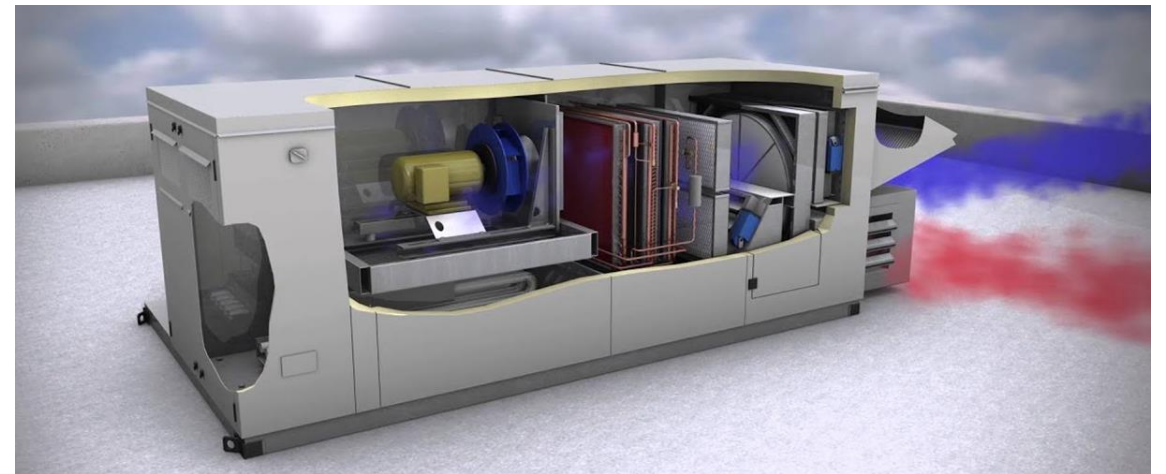
All building exhaust is recovered

Digital Scroll Compressors

Heat Pump Heating

Coefficient of Performance of 2.3

Operates in heating down to 0°F



5. Net Zero Case Study

River Trails SD26: Prairie Trails School

Mechanical System Selection

Troy follow up with Jeff Oke re expected credits /programs and swap out image

System/ Plant	EUI		Energy Cost	
	(kBtu/sqft/ yr)	% Savings	(\$/ yr)	% Savings
Baseline: 90.1-2013	75	-	\$ 30,128	-
Single Pipe Hybrid Geothermal	20	74%	\$ 21,854	27%
Single Pipe 100% Geothermal	20	74%	\$ 21,682	28%
VRF Hybrid Geothermal	17	78%	\$ 18,264	39%
VRF 100% Geothermal	16	78%	\$ 18,026	40%
VRF Air Cooled	23	69%	\$ 25,327	16%

Energy Source	Utility Costs	
	Electric	\$0.086 per kWh
Natural Gas	\$0.386 per therm	\$0.004 per kBtu

Envelope Assumptions	
Exterior Wall:	R-18 (U-0.055)
Roof:	U-0.032
Windows:	U-0.42 and SHGC: 0.40
Window to Wall Ratio:	35%

5. Net Zero Case Study

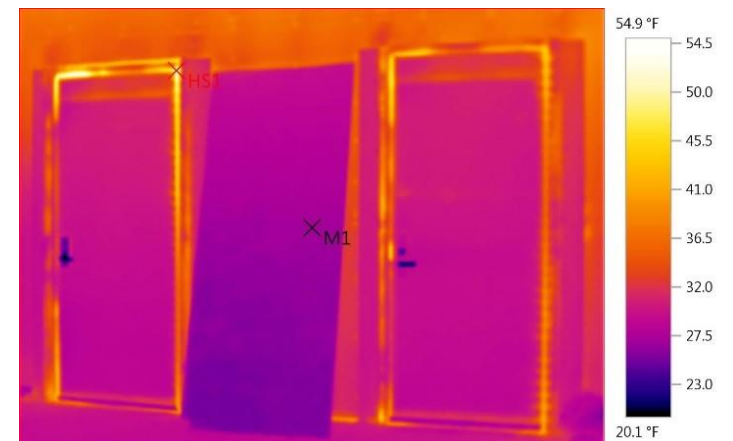
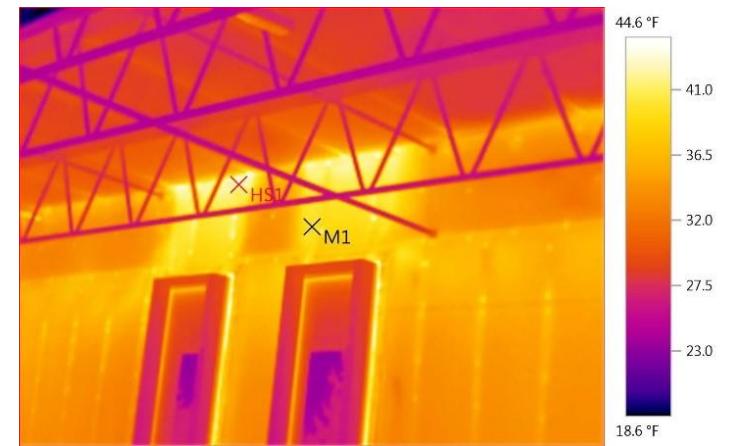
River Trails SD26: Prairie Trails School

Commissioning + Long-Term Monitoring / Maintenance

- Fundamental Commissioning
- Building Level Metering
- Enhanced Commissioning + Monitor Based
- Initiate plan for Long-Term Monitoring and Maintenance

Establish a Sustainability and Resiliency Management System

Post-Development Evaluation and Reporting



5. Net Zero Case Study

River Trails SD26: Prairie Trails School

Long-term Maintenance

Deferred Maintenance is not an option

- Air makeup units and refrigeration units must be inspected, tuned & kept in perfect condition.

Continuous building envelope inspections are a priority to monitor

- Door and window seals
- Door thresholds
- Caulk joints
- Mechanical dampers



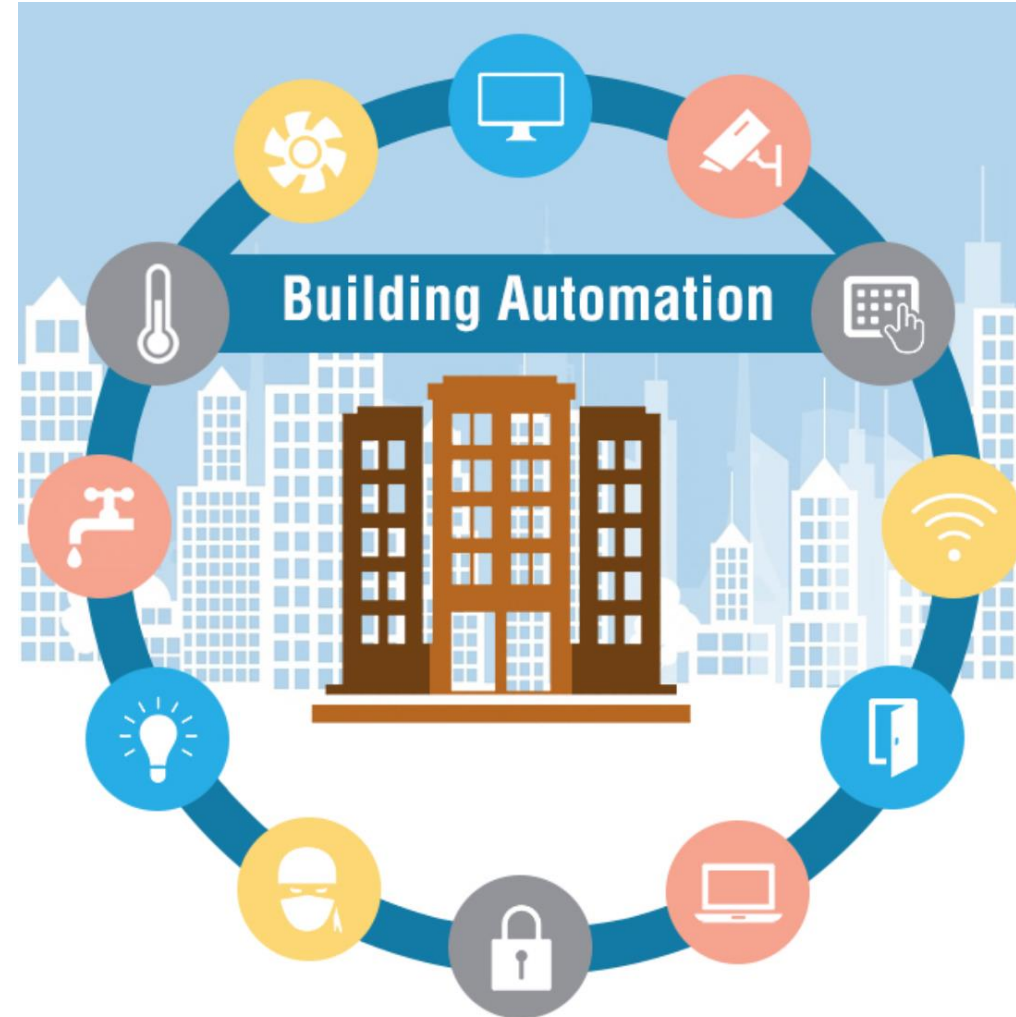
5. Net Zero Case Study

River Trails SD26: Prairie Trails School

Long-term Maintenance Considerations

Monitoring, trending and responding to BAS information is critical

- The energy load and solar generation reporting will help identify system issues early and help meet annual energy goals.
- Need to expect building control challenges. These systems are complex and need tuning.
- Include complete BAS scope that includes all tools and points necessary to maximize building efficiencies.
- Provide staff time and expertise to assure successful start up and system adjustments
- Consistent adjustments of the building occupation schedule.



5. Net Zero Case Study

River Trails SD26: Prairie Trails School

Long-term Maintenance Considerations

Building content must be monitored to ensure NO

- personal refrigerators
- microwaves
- heaters and fans
- Monitor seep mode, enabled

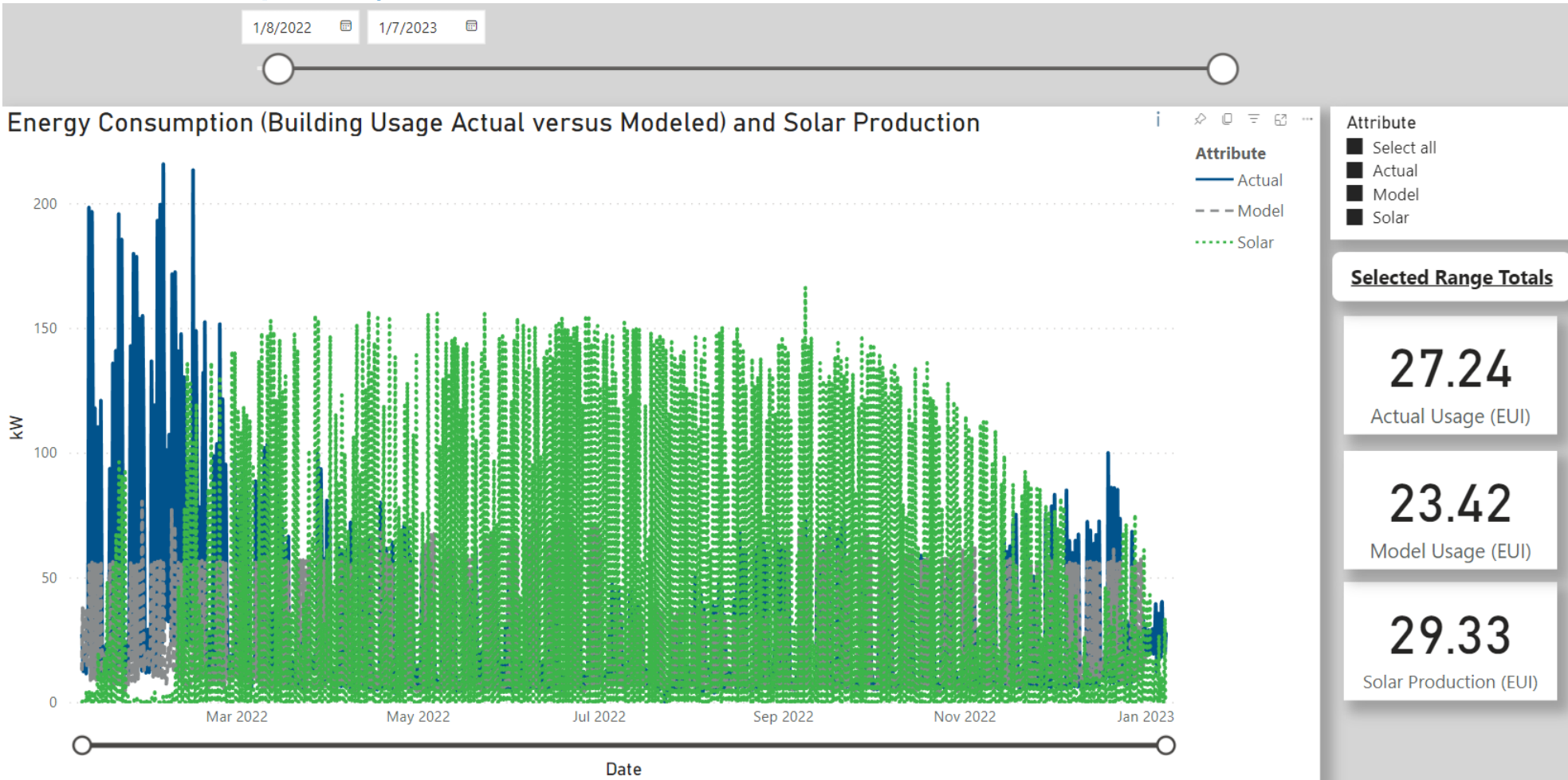
All of which will increase the building mechanical and electrical loads



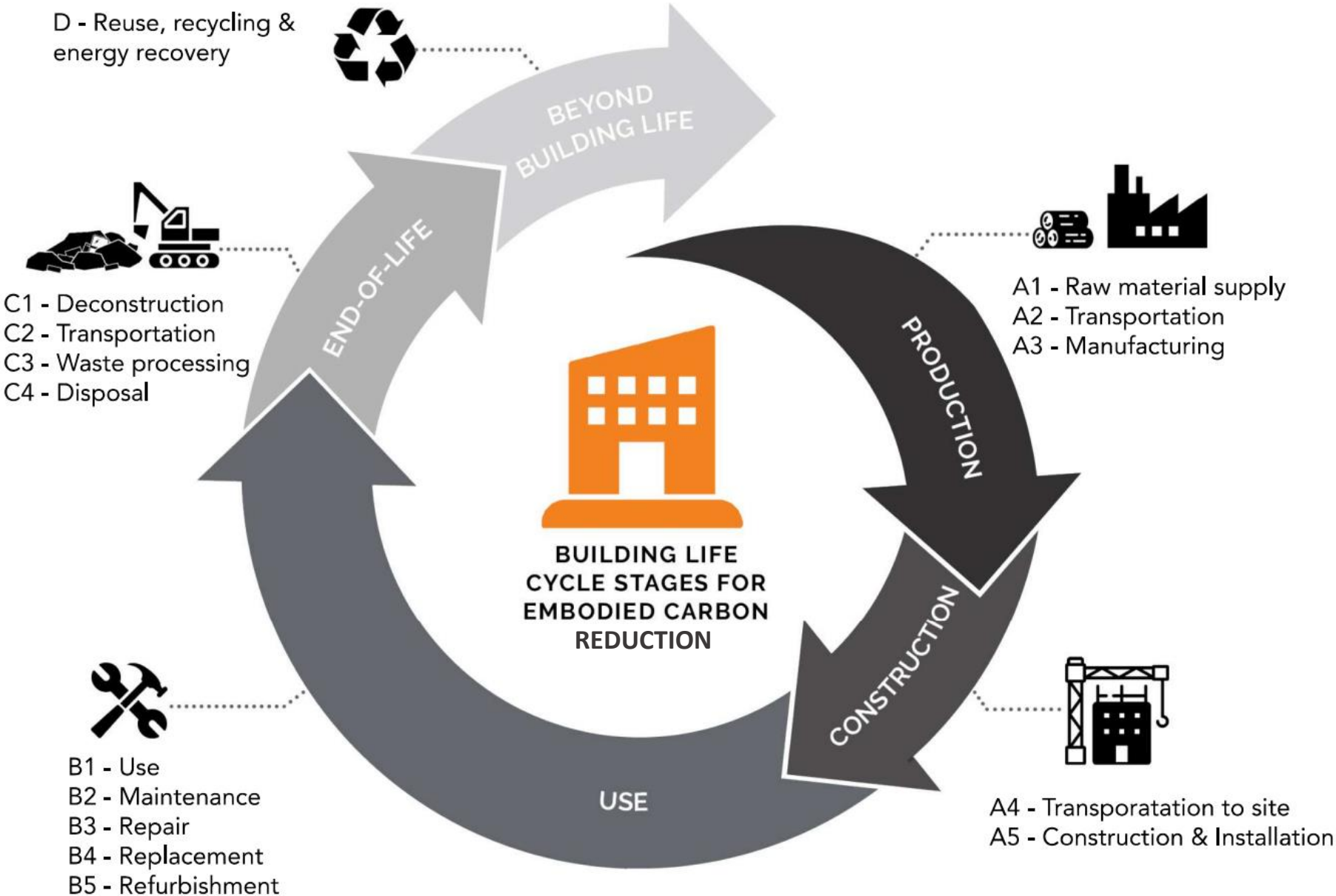
5. Net Zero Case Study

River Trails SD26: Prairie Trails School

Post Occupancy



6. What steps can you take in your next project?



7. Green Ribbon Schools

U.S. Department of Education



Schools, districts, and postsecondary institutions **apply to their state education authorities**, whether K-12 or postsecondary.

State participation in the award is voluntary and not all state education authorities choose to nominate.

- Public engagement initiative structured as a federal recognition award for school sustainability.
- Intended to promote state and local collaboration regarding school facilities, health, and environmental education.
- Celebrates these schools and brings more attention to their work and sustainability practices
- A small number of honorees each year to share resources that all schools can employ through its [Green Strides School Sustainability Resource Hub](#).

7. Green Ribbon Schools

3 Pillars of the Green Ribbon Award



To be selected for recognition, state nominees must show progress in ALL the following areas, not merely some. These are minimum requirements for the **federal award**.

I. Reduced Environmental Impact & Costs

- Reduced or eliminated greenhouse gas emissions, using an energy audit or emissions inventory and reduction plan, cost-effective energy efficiency improvements, conservation measures, and/or on-site renewable energy and/or purchase of green power;
- Improved water quality, efficiency, and conservation;
- Reduced solid and hazardous waste production through increased recycling, reduced consumption, and improved management, reduction, or elimination of hazardous waste; and
- Expanded use of alternative transportation, through active promotion of locally-available, energy-efficient and renewable energy options and implementation of alternative transportation supportive projects and policies.

II. Improved Health and Wellness

- High standards of Whole School Whole Community, Whole Child health, including health, nutrition, and outdoor physical education; health, counseling, and psychological services for both students and staff; family community involvement; and
- An integrated school environmental health program that considers occupant health and safety in all design, construction, renovation, operations, and maintenance of facilities and grounds.

III. Effective Environmental & Sustainability Education

- Interdisciplinary learning about the key relationships between dynamic environmental, energy, and human systems;
- Use of the environment and sustainability to develop STEM content knowledge and thinking skills to prepare graduates for the 21st century technology-driven economy; and
- Development of civic engagement knowledge and skills and students' application of such knowledge and skills to address sustainability and environmental issues in their community.

8. Key Questions to Get Started



MITIGATION: Transitioning to clean energy, clean transportation, sustainable food use, and building electrification.

QUESTIONS	YES	NO
Sustainability. Does my district or community have any existing sustainability plans?		
Infrastructure. Does my district or community have a policy to ensure new school infrastructure, renovations, retrofits, and systems replacements support healthy sustainable learning environments?		
Does my district ensure new building plans consider opportunities to make progress to net-zero energy?		
Does my district ensure new buildings, retrofits, and renovations are designed to optimize health and sustainability and utilize energy-efficient clean technology?		
Does my district utilize renewable energy? Are there opportunities to support schools in utilizing renewable energy like solar and geothermal?		
Does my district ensure major systems replacements (including HVACs) utilize clean, efficient, and sustainable technologies that support electrification?		
Are there state, federal, or other resources or community partners that can help my district support sustainable infrastructure?		

QUESTIONS	YES	NO
Transportation. Does my district or community have a plan in place to transition its school bus fleet to electric?		
As my district gets new buses or district vehicles, does it ensure those buses and vehicles are electric with zero-emissions?		
Does my district have a plan to build the needed charging infrastructure for electric buses and workplace charging?		
Are there state, federal, or other resources or community partners that can help my district support the transition to electric buses?		
Food. Does my district support sustainable food use?		
Does my district access locally-grown, sustainable food through local procurement or farm to school programs?		
Does my district support food donation or food rescue?		
Does my district support composting?		
Are there state, federal, or other resources or community partners that can help my district support the transition to sustainable food use?		

8. Key Questions to Get Started



ADAPTATION AND RESILIENCE: Supporting adaptation and resilience strategies.

QUESTIONS	YES	NO
Risks. What are the likely climate risks in my community?		
What are the things your community cares about and agrees are important to protect?		
How will climate risks potentially affect students, families, learning, and schools?		
Do climate risks differ by communities or schools within your district?		

QUESTIONS	YES	NO
Mental Health. Are there supports currently in place to meet students' mental health needs in the event of community-wide trauma from climate impacts?		
Does my district provide professional development for educators and school leaders to support student mental health in response to climate impacts?		
Are there supports currently in place for educators, school leaders, and other school staff to successfully implement trauma-informed practices?		
Are there state, federal, or other resources, or community partners that can help my district support student mental health to build resilience to climate impacts?		
Virtual learning. Does my district have a plan in place for virtual learning in the event of disruptions due to climate impacts?		
Does my district provide supports and resources to educators and families to help with virtual learning?		
Are there state, federal, or other resources, or community partners that can help my district support potential virtual learning in the event of climate-related disruptions?		
Green sustainable schoolyards. Does my district have a plan to transition schoolyards to green sustainable schoolyards?		
Are there schools or communities impacted by heat island effects or storm-related flooding that can benefit most from access to green sustainable schoolyards?		
Community Resilience Hubs. Are schools in my district equipped to be hubs of community resilience?		
Are there city/town, state, federal, or other resources, or community partners that can help schools in my district become hubs of resilience?		

8. Key Questions to Get Started



EDUCATION: Supporting teaching and learning on climate change, climate solutions, and sustainability across the curriculum and across all grade levels.

QUESTIONS	YES	NO
Existing curricula. How, if at all, are climate change, climate solutions, and sustainability included in existing curricula?		
Are these topics taught across subjects and grade levels in a developmentally appropriate way?		
Does my district have an existing environmental literacy plan?		
Out-of-School Education. How, if at all, does my district partner with out-of-school education providers to increase access to informal learning opportunities that include climate change, climate solutions, and sustainability?		
Does my district currently partner with out-of-school providers related to climate change, climate solutions, and sustainability?		
Are there state, federal, or other resources, or community partners that can help my district build partnerships with out-of-school education providers to increase educational opportunities for students, teachers, and families related to climate change, climate solutions, and sustainability?		
Indigenous Knowledge. How if at all, does my district partner with local Indigenous communities, Tribal organizations, and Indian centers to integrate Indigenous knowledge into teaching and learning?		
Do these partnerships support holistic, community-based, culturally-relevant education related to climate solutions and sustainability?		
Are there state, federal, or other resources, or community partners that can help my district build partnerships with local Indigenous communities, Tribal organizations, and Indian centers?		

QUESTIONS	YES	NO
Does my district currently support place-based or project-based learning related to climate change, climate solutions, and sustainability?		
Are there state, federal, or other resources, or community partners that can help my district develop curricula across subject areas and grades related to climate change, climate solutions, and sustainability?		
Professional development. How, if at all, does your district provide high-quality, embedded, and ongoing professional development to educators on climate change, climate solutions, and sustainability?		
Are there state, federal, or other resources, or community partners that can help my district support potential virtual learning in the event of climate-related disruptions?		
Does my district currently support educators in teaching related to climate change, climate solutions, and sustainability?		
Are there state, federal, or other resources, or community partners that can help my district support professional development for educators and school leaders related to climate change, climate solutions, and sustainability?		
Career and Technical Education. Does my district have career and technical education opportunities to prepare students for a clean economy, resilient and sustainable future?		
Is resilience and environmental sustainability integrated across existing CTE pathways?		
Does my district have existing CTE programs to prepare students for high-skill, high-wage jobs in the clean and resilient economy?		
Does my district partner with community colleges, apprenticeship programs, local businesses, and other community-based organizations to build pathways to high-skill, high-wage, in-demand jobs?		
Are there state, federal, or other resources or community partners that can help my district provide opportunities to prepare students for a clean economy, resilient, and sustainable future?		

8. Key Questions to Get Started



EQUITY: Advance equity by engaging and prioritizing students, parents, caregivers, families, and communities most impacted by climate change when developing a climate action plan.

QUESTIONS	YES	NO
<p>Community Inclusion. How, if at all, does my district include students, parents/ caregivers, and community members--in particular Black, Latino, Asian American and Pacific Islander, and Indigenous perspectives, people with disabilities and low-income urban and rural perspectives--in decision-making?</p>		
<p>Do students currently have a voice in decision-making in my district?</p>		
<p>Are there communities we can better engage in decision-making related to climate action?</p>		
<p>Prioritize Equity. How, if at all, does my district ensure equitable resources, supports, and opportunities for Black, Latino, Asian American and Pacific Islander, and Indigenous students, students with disabilities and low-income urban and rural students?</p>		
<p>How, if at all, does my district ensure equitable access to healthy sustainable learning environments with sustainable infrastructure, transportation, and healthy food?</p>		
<p>How, if at all, does my district ensure equitable access to mental health supports, accessible virtual learning, green sustainable schoolyards, and community resilience hubs?</p>		
<p>How, if at all, does my district ensure equitable access to educational opportunities related to climate change, climate solutions, and sustainability?</p>		
<p>How, if at all, does my district ensure equitable access to career and technical education opportunities to prepare students for high-wage, high-skill jobs in the clean economy?</p>		

9. Additional Resources

[AIA Resilient Project Process Guide – AIA](#)
[2030 Challenge / SB2030](#)
[2030 Palette: Design and Planning Strategies](#)
[ASCE – PRISM Infrastructure Resilience SE2050](#)
<https://carbonleadershipforum.org>
[Envision - Institute for Sustainable Infrastructure](#)
[Zofnass Program for Sustainable Infrastructure \(Harvard\)](#)
[Financial System Resilience Index \(NEF\)](#)
[International Living Future Institute Living Future](#)
[Living Building Challenge](#)
[U.S. Green Building Council \(USGBC\) C3 Living Design Project – RELi Tools To Help You Get There - Sustainable Performance Institute \(sustainable-performance.org\)](#)
<https://www.bluegreenalliance.org/Zebxplaybook.pdf>

[EPA Facility Stormwater Management | US EPA](#)
[\[Re\]Build America's School Infrastructure Coalition \(buildusschools.org\)](#)
<https://ThisisPlaneted.org>
[Achieving Zero Affordability: www.nrel.gov/docs/fy20osti/77414.pdf](#)
[Home - Cradle to Cradle Products Innovation Institute \(c2ccertified.org\)](#)
[Red2Green Healthy Materials Platform • MateriallyBetter Healthy Materials Lab | Material Collections](#)
[HPD Public Repository - HPD Collaborative \(hpd-collaborative.org\)](#)
[Search Products that Meet the Safer Choice Standard | US EPA](#)
[IBC 2015 – International Building Code](#)
[ICC 500 ICC/NSSA Standard for the Design and Construction of Storm Shelters.](#)
[Air Sensor Technology and Indoor Air Quality | US EPA](#)
www.ashrae.org/aedg [Advanced Energy Design for Zero Energy K-12 Schools](#)
www.nrel.gov/docs/fy19osti/72847.pdf
[ASCE 7-10 American Society of Civil Engineers \(ASCE\) 2010. Minimum Design Loads For Buildings and Other Structures.](#)
[ASCE 24-14. Flood Resistant Design and Construction.](#)

[FEMA P-750 NEHRP Recommended Seismic Provisions for New Buildings and Other Structures](#)
[FEMA P-55. Coastal Construction Manual.](#)
[FEMA P-908. Mitigation Assessment Team Report](#)
[FEMA P-320, Taking Shelter from the Storm: Building a Safe Room](#)
[FEMA P-361, Safe Rooms for Tornadoes and Hurricanes](#)
[FEMA-428, Design Safe School Projects in Case of Terrorist Attacks and School Shootings](#)
[Disaster Safety](#)
[TornadoHistoryProject](#)
[Illinois State Geological | ISGS](#)
[NFPA 909: Code for the Protection of Cultural Resource](#)
[NFPA 13: Standard for the Installation of Sprinkler Systems](#)
[NIST Special Publication 1190](#)
[NOAA National Weather Service, National Hurricane Center.](#)
[Red Cross](#)



 #iasboAC23

 Do Today Right!

Presenters:

Lyndl Schuster: CSBO, River Trails SD 26
lschuster@rtsd26.org

Dan Whisler: Director of Buildings and Grounds, River Trails SD26
dwhisler@rtsd26.org

Eric Miller: CSBO, Glenview SD34
emiller@glenview34.org

Troy Kerr: Vice President, FGM Architects
TroyKerr@fgmarchitects.com

Lynne Sorkin: Principal, FGM Architects
LynneSorkin@fgmarchitects.com

 #iasboAC23

2023 ANNUAL
CONFERENCE

Do Today **Right!**