We’ll be starting in just a few minutes…

Tell us…please send your response to the webinar organizers via the question box:

What topics are you interested in for future webinars?
Back to School

Include Energy Efficiency in Your Back to School Toolbox

Sept 12, 2017
3:00-4:00 PM ET
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sharon Jaye</td>
<td>Green Schools Alliance</td>
</tr>
<tr>
<td>Anisa Heming</td>
<td>USGBC</td>
</tr>
<tr>
<td>Crystal McDonald</td>
<td>DOE</td>
</tr>
</tbody>
</table>
Sharon Jaye
Green Schools Alliance
Connecting and empowering champions who are creating healthy and sustainable schools
We are an Alliance

Our community represents more than 8,800 schools, districts, and organizations from 46 U.S. States and 82 countries.

Hundreds of principals and superintendents have set the stage for meaningful change by making leadership commitments affecting nearly 8,000 schools and 5+ million students.

Supporters of sustainable communities connect through the Alliance to remove barriers and create the norm for collaborative work.
We foster communication and interdepartmental learning so sustainability is part of a school’s organizational culture.

We encourage healthy systems, active design, and progressive efficiencies in the school’s physical place.

We cultivate charismatic leadership, connection to place, and student-powered action to elevate a school’s educational program.
Integrated Tools and Programs

We are empowering students. With our engagement tools, programs, and trainings, students gain skills to become sustainability leaders in their communities.

We are supporting schools and districts. We provide leadership development, management solutions, and reporting systems to boost institutional efficiency and effectiveness.

We are building community. We offer collaborative tools for individuals, supporters, and leaders to break down silos and build a stronger “green schools” community.
Online Community

RESOURCE CENTER
Over 1,000 curated links to books, field trips, games, competitions, grants, non-profits, documentaries, and much more. The results are only limited by your imagination and keyword search!

DISCUSSION GROUPS
Have questions? Start a discussion. Reach out to your peers for answers. Everyone has something to learn and something to teach. Help your fellow sustainability champions by sharing what worked for you.

VIDEO GALLERY
Found within the Discussion Groups, our collection of videos includes many created by students through our Video Competition. Use them in your classrooms or assemblies as learning tools.

SUCCESS STORIES
Found within the blogs, Success Stories offer best practices and school sustainability projects that can work. Learn how others accomplished their goals. Add a story of your own.

BLOGS & NEWS
Our member Blogs are written by our students and school professionals alike! Read their stories and get Alliance news!

CALENDAR
View our calendar of events for conferences, webinars, grant deadlines and more. Post your own local events!

ASK THE ALLIANCE
This is the place for frequently asked questions, tips on how to use the community, or just ask a question.
District Collaborative

24 of the largest public school districts in the U.S. representing 5,949 schools and 3.8+ million students

Goal I - Leverage
To leverage our collective purchasing power to increase access to sustainable alternatives and promote market transformation

Goal II - Influence
To influence local, regional, and national policy decisions

Goal III - Contribute
To build and share best practices at a district level while contributing to the development of district-level programs for Alliance members

Districts with more than 40,000 students can join with superintendent commitment
Building Operator Certification

BOC helps building operators understand how facility systems work together so you can improve efficiency, save money and keep your equipment running longer. Through practical instruction and hands-on training, they give you the tools you need to excel.

Why get certified?

HVAC systems. Electrical systems. Lighting. Data collection. Environmental regulations and code compliance. Facility personnel manage a lot of moving pieces every day – and the Building Operator Certification® (BOC) program helps them do it more efficiently.

Green Schools Alliance community members are eligible for a $100 discount on tuition.
**Teacher Professional Development**

**GreenSchools program** inspires students to apply their STEM and investigative skills to create greener and healthier schools – and save schools money. Students learn they can make a difference in the world as they are empowered to make changes and take ownership of the projects they lead to reduce their school’s environmental footprint.

**GreenSchools Investigations:**
- Energy use
- Waste and recycling
- Water consumption
- School site
- Environmental quality

Using the results of their investigations, students select, design, and implement one or more action projects, and measure their impacts.
Youth Leadership Guides

45 youth-written How-to Guides that help young people plan, promote, and fundraise for their environmental campaigns.

- How to Resolve Conflict
- How to Present a Webinar
- How to Engage Elected Officials
- How to Improve Decision-Making
- How to Work with the Media
- How to Recruit and Manage Volunteers
What’s Coming Next?

1. Sustainability Tracking and Roadmap Tool (START)
2. Student Engagement Program Expansion
3. Utility Dashboards
Anyone can be a part of our Community!

Sustainability Coordinators, Students, Principals, Educator, Facility Managers, Business Officers, Procurement Professionals, Administrators, Staff, Parents, Volunteers, Non-profit Advocates, Conservationists, Sponsors, Corporations, Elected Officials, Small Business Owners, Community Organizers... etc.
Better Buildings Webinar: Back to School
Anisa Heming
Director, Center for Green Schools at USGBC

September 12, 2017
Hosted by U.S. Department of Energy
Net Impact (waste, water, energy)

Health & Performance

Environmental & Sustainability Literacy
1. Professional Learning Opportunities
2. Measuring and Certifying Performance
3. Getting into the Classroom
1. Professional Learning Opportunities
2. Measuring and Certifying Performance
3. Getting into the Classroom
SCHOOL DISTRICT SUSTAINABILITY STAFF
Online network for asking and sharing

Regular professional development webcasts

Annual, free in-person training
GREEN SCHOOLS CONFERENCE & EXPO
MAY 3-4, 2018 in DENVER, CO
Professional Learning Opportunities

Measuring and Certifying Performance

Getting into the Classroom
12,000+

USGBC members represent the best organizations from all fields. Our members are local and international, big and small, mission- and market-driven. They make an impact within their sphere of influence and collectively advance a more sustainable built environment.
LEED® is the most widely recognized and widely used green building program across the globe, with more than 90,100 projects participating in over 164 countries and territories and 2.2 million square feet certified every day. LEED is a certification program for buildings, homes and communities that guides design, construction, operations and maintenance.
www.usgbc.org/credits
LEED v4 SYSTEM GOALS

- Reduce contribution to global climate change
- Enhance individual human health
- Protect and restore water resources
- Protect and enhance biodiversity and ecosystem services
- Promote sustainable and regenerative material cycles
- Build a green economy
- Enhance community quality of life
LEED v4: PERFORMANCE
Action-Oriented, Measurable Green Performance.

Arc helps you measure performance, make improvements and benchmark against other projects.

Discover Arc

arcskoru.com
## All Actions

<table>
<thead>
<tr>
<th>STATUS</th>
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<td>Site Development - Protect or Restore Habitat</td>
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<td></td>
<td>Rainwater Management</td>
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<td>Heat Island Reduction</td>
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<td>Light Pollution Reduction</td>
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<td>Site Management</td>
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<td>Site Improvement Plan</td>
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<td>Indoor Water Use Reduction</td>
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<td>Energy Efficiency Best Management Practices</td>
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<td>Minimum Energy Performance</td>
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<td>Enhanced Refrigerant Management</td>
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<td>Ongoing Purchasing and Waste Policy</td>
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</table>
1. Professional Learning Opportunities
2. Measuring and Certifying Performance
3. Getting into the Classroom
GREEN APPLE
DAY OF SERVICE

Empowering volunteers to take action through high-impact projects that reduce environmental impact, enhance student health, and increase environmental literacy.
Air All Around Me
Sustainable Intelligence

What Is Energy?
Sustainable Intelligence

9-Minute Nutrition Ninja, grades K-2

Wonderful World of Plants
Sustainable Intelligence

TurfMutt & the Outdoor Powers Explore Living Landscapes (K-2)
TurfMutt

Space in Places
Sustainable Intelligence

Bodies in Motion
Sustainable Intelligence

Natural Laws and Principles of the Materials Cycle
The TerraCycle Curriculum Lesson Sets
Module: Energy is Everywhere!

Energy All Around Us

Author: EcoRise Youth Innovations and Representaciones e Inteligencia Sustentable

Duration: 70 minutes
Two 35-minute sessions

Primary subjects: Science

Grade: 3, 4

About
In this lesson, students learn the difference between renewable and nonrenewable energy. They explore examples of each type of energy, as well as the advantages and disadvantages of each. Then students apply what they’ve learned by creating a model of a windmill that can convert wind—a renewable energy source—to mechanical energy. They use the windmill to accomplish work, and then they experiment with and reflect upon ways in which we can take advantage of renewable energy resources.

Key objectives for students
- Explain where energy comes from and how we use it.
- Define electricity and explain why it is important to us.
- Define renewable and nonrenewable, and provide examples of these types of energy sources.
- Understand the advantages and disadvantages of renewable and nonrenewable energy sources.

Secondary subjects
Civics and Government, Economics, Environmental Education, History, Mathematics, Reading or Language Arts

Topics
Energy, Electricity, Renewable energy, nonrenewable energy, fossil fuel, Coal, natural gas, oil, petroleum, nuclear power, wind turbine, wind energy, solar cell, solar energy, hydroelectric, sustainable, mechanical energy, static electricity, Electric charge, power, Climate

Skills
Collaboration, Communication skills, Creative problem solving, Critical Thinking, Systems thinking

Values
Curiosity, Empathy, Global Leadership, Mindfulness, Optimism, Resilience

Methods
Brain-Based Learning, Design Thinking, Multi-Disciplinary, Multiple
Lesson activities

Session 1:

<table>
<thead>
<tr>
<th>Time</th>
<th>Exercise</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 min</td>
<td>Introduction</td>
<td>Show students video about energy conservation.</td>
</tr>
<tr>
<td>20 min</td>
<td>Presentation</td>
<td>Show students the presentation about renewable and nonrenewable and energy.</td>
</tr>
<tr>
<td>5 min</td>
<td>Wrap-Up</td>
<td>Lead students in a final reflection.</td>
</tr>
</tbody>
</table>

Session 2:

<table>
<thead>
<tr>
<th>Time</th>
<th>Exercise</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 min</td>
<td>Set-Up</td>
<td>Divide the class into groups, and guide them to their workstations.</td>
</tr>
<tr>
<td>20 min</td>
<td>Activity</td>
<td>Students first create a pinwheel and then use it to build a windmill that can hoist tiny objects.</td>
</tr>
<tr>
<td>5 min</td>
<td>Data Gathering</td>
<td>Students record data as they use their windmills.</td>
</tr>
<tr>
<td>5 min</td>
<td>Wrap-Up</td>
<td>Lead students in a final reflection about what they’ve learned about energy resources.</td>
</tr>
</tbody>
</table>

Implementation

Session 1:

1. **Introduction:** Show students a video about energy conservation, such as Schoolhouse Rock: Science – Energy Blues Music Video or Safety Smart® Science with Bill Nye the Science Guy®: Renewable Energy. — PREVIEW.

2. **Presentation:** Help students develop a vocabulary about energy resources by showing them the Energy Resources Presentation, using the Teacher’s Notes to guide discussion.

3. **Wrap-Up:** Use the Reflection Questions on the Assess tab to help students consolidate what they’ve learned.

Session 2:

1. **Set-Up:** Divide the class into teams of 3–4 students. Have each team go to a workstation, at which you’ve placed the materials they will need, as well as copies (one per student) of the Pinwheel to Windmill Activity Sheet.
Check out this list of 99 Green Apple Day of Service project ideas you can do anytime, any day.

Project type: - Any -

Assess Indoor Air
Assess School Lighting
Celebrate Success
Clear Out The Clutter
Communicate Your School’s Sustainability Values
Create or Tend a School Garden
Educate for Environmental and Sustainability Literacy
Fun with Fitness in the Neighborhood
Put Rainwater to Use
Back to School: Including Energy Efficiency in K-12 Classrooms

Crystal McDonald
K-12 Sector Lead
September 12, 2017
Overview

- Why Energy Efficiency
- Better Buildings – Profiling Leadership
- Better Buildings K-12 Partners
- DOE K-12 Energy Engagement with School Districts
- Energy Matters
- Tools & Resources
Education Sector is Important (K12 + Higher Ed)

20% energy reduction = $3.3 B in savings
Better Buildings®
U.S. Department of Energy

Better Buildings Challenge
Better Buildings Alliance
Better Buildings, Better Plants
Better Buildings Accelerators
Better Buildings Residential
Superior Energy Performance

Making Energy Efficiency Investment Easier
- Building Performance Database
- Building Energy Data Exchange Specification
- New Financing Solutions
- Building Energy Asset Scoring Tool
- Home Energy Score
- Appraisal Foundation Memorandum of Understanding

Developing a Skilled Clean Energy Workforce
Better Buildings Workforce Guidelines

Leading by Example in the Federal Government
- New Executive Order
- President’s Performance Contracting Challenge
- DOE Leadership
Current BBC K-12 School District Partners

- Alachua County Public Schools, FL
- Albuquerque Public Schools, NM
- Alexandria City Public Schools, VA
- Anne Arundel County Public Schools, MD
- Aurora Public Schools, CO
- Bullitt County School District, KY
- Camas School District, WA
- Douglas County School District, NV
- Dysart Unified School District No. 89, AZ
- Evergreen School District, WA
- Fairfax County Public Schools, VA
- Fort Atkinson School District, WI
- Garnet Valley School District, PA
- Hillsboro School District, OR
- Houston Independent School District, TX
- Huntsville City School District, AL
- Indianapolis Public Schools, IN
- Kansas City Public Schools, MO
- Los Angeles Unified School District, CA
- Manchester School District, NH
- Mesa County Valley School District 51, CO
- Parkway School District, MO
- Portland School District, OR
- Poudre School District, CO
- River Trails School District 26, IL
- Tulsa Public Schools, OK
- Xenia Community Schools, OH
Showcase Project: Poudre High School Infrastructure Replacement

SECTOR TYPE
Education

LOCATION
Fort Collins, Colorado

PROJECT SIZE
277,000 Square Feet

FINANCIAL OVERVIEW
Project Cost $8,104,000

Implementation Model:
Creating A Culture Of Energy Efficiency

OVERVIEW
Poudre School District (PSD) implemented its first energy conservation plan more than two decades ago and the district continues to improve energy efficiency across its 32 elementary schools, ten middle schools, six high schools, and several support services facilities totaling 4 million square feet.

Annual Energy Use
(Source EUI)

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>111 kBtu/sq. ft.</td>
<td>83 kBtu/sq. ft.</td>
</tr>
</tbody>
</table>

Energy Savings: 26%

Annual Energy Cost

|--------------------------|---------------------|

Cost Savings: $10,000

Tools & Resources:
- Poudre School District Sustainable Design Guidelines - Aligned Feasibility Study
- Becoming a Leader in Sustainable Building: Organizational Change (2012)
- Annual Sustainability Report (2012)

Outreach
PSD’s Facility Services Department manages the district’s sustainability announcements, and provides input on community engagement activities and projects.
The DOE K-12 EERE Nexus

- Building Technologies
- Training & Development
- STEM Education Resources
- Energy Department
- Energy Literacy
- Better Buildings
- Competitions
- Career Maps
Areas of Impact

- Building Energy Use Benchmarking
- Interior and Exterior Lighting
- Energy Management Information Systems
- Financing
- Energy Savings Performance Contracts (ESPCs)
- Fleet Conversions
- Zero Energy Buildings
- Advanced Plug and Process Loads
- Workforce Training & Development
- STEM Connection
<table>
<thead>
<tr>
<th>Building</th>
<th>Size (Sq Ft)</th>
<th>Energy Use Intensity (KBtU/Sq Ft)</th>
<th>Annual Energy Cost</th>
<th>Annual GHG Emissions (Tons)</th>
<th>EnergyStar Score</th>
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<tr>
<td>McKinley</td>
<td>282,200</td>
<td>87</td>
<td>$610,755</td>
<td>3,127.24</td>
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<tr>
<td>Dunbar</td>
<td>283,000</td>
<td>44</td>
<td>$393,023</td>
<td>1,966.13</td>
<td>81</td>
</tr>
</tbody>
</table>
Contact

Crystal McDonald
Better Buildings Challenge
K-12 Sector Lead
202-287-1799
Crystal.McDonald@ee.doe.gov
YEAR OF THE LEASE:
NEW TOOLS FOR LEASED SPACE
ENERGY EFFICIENCY

Tuesday, October 3, 2017  |  3:00 - 4:00 PM ET

Learn about new developments for furthering energy and water savings in leased spaces, including new programs from EPA and the latest enhancements to Better Buildings efforts.
### Today’s Presenters

<table>
<thead>
<tr>
<th>DOE Program Leads</th>
<th>Program Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holly Carr</td>
<td>Kendall Sanderson</td>
</tr>
<tr>
<td>DOE, Better Buildings Challenge</td>
<td>JDM Associates</td>
</tr>
<tr>
<td><a href="mailto:Holly.Carr@EE.Doe.Gov">Holly.Carr@EE.Doe.Gov</a></td>
<td><a href="mailto:ksanderson@jdmgmt.com">ksanderson@jdmgmt.com</a></td>
</tr>
</tbody>
</table>

- Crystal McDonald
  - DOE
  - crystal.mcdonald@ee.doe.gov

- Anisa Heming
  - USGBC
  - aheming@usgbc.org

- Sharon Jaye
  - Green Schools Alliance
  - sjaye@greenschoolsalliance.org

- Holly Carr
  - DOE, Better Buildings Challenge
  - Holly.Carr@EE.Doe.Gov

- Kendall Sanderson
  - JDM Associates
  - ksanderson@jdmgmt.com

- Brittany Ryan
  - JDM Associates
  - bryan@jdmgmt.com

### Additional Questions? Please Contact Us

**betterbuildingswebinars@ee.doe.gov**

Follow us on Twitter @BetterBldgsDOE
APPENDIX: Tools & Resources
DOE Contacts for Education Resources

- Better Buildings
  Crystal McDonald, Crystal.McDonald@ee.doe.gov – Better Buildings Challenge, K-12 Sector Lead
- Fuel Cells/Vehicles
  James Kast, James.Kast@EE.DOE.Gov, Fuel Cells Technologies Office
- Geothermal
  Arlene Anderson, Arlene.Anderson@ee.doe.gov, Geothermal Technologies Office
- Science Bowl
  Jan Tyler, Jan.tyler@science.doe.gov – National Science Bowl National Coordinator
- Solar Decathlon
  Linda Silverman, Linda.Silverman@ee.doe.gov, Solar Decathlon Director
- SunShot Initiative
  Dave Rench-McCauley, Dave.Rench-McCauley@ee.doe.gov, Solar Energy Technologies Office
- Wind
  Amber Passmore, Amber.Passmore@EE.Doe.Gov, Wind Energy Technologies Office Education Program
- Zero Energy Schools
  Nathaniel Allen, Nathaniel.Allen@ee.doe.gov – Zero Energy Buildings for Schools Accelerator Lead
Follow Solar Decathlon!

- **Website**  www.SolarDecathlon.gov
- **Facebook**  https://www.facebook.com/DOESolarDecathlon/
- **Twitter**  https://twitter.com/Solar_Decathlon
- **Flickr**  https://www.flickr.com/photos/solar_decathlon/
- **Instagram**  https://www.instagram.com/doesolardecathlon/
- **Gmail**  DOESolarDecathlon@gmail.com
- **YouTube**  https://www.youtube.com/user/DOESolarDecathlon
- **Google+**  https://plus.google.com/+DOESolarDecathlon/posts
  https://www.pinterest.com/energy/solar-decathlon/
- **Vimeo**  https://vimeo.com/channels/solardecathlon
Solar Resources for Green Ribbon Schools

- High school and more advanced students
  - PV Online Training (electric code focused) - [http://www.pvonlinetraining.org/](http://www.pvonlinetraining.org/)
  - Solar in Your Community Challenge – [www.solarinyourcommunity.org](http://www.solarinyourcommunity.org)

- College students and current professionals
  - GEARED - [www.gearedusa.org](http://www.gearedusa.org)

- Local-level solar resources

See interactive animations of how a Wind Turbine Works at energy.gov (http://energy.gov/eere/wind/animation-how-wind-turbine-works)

Visit the Open Energy Information (OpenEI) Wind for Schools Portal to access data from turbines at U.S. schools and find educational resources for all grade-levels (http://en.openei.org/wiki/Wind_for_Schools_Portal)

Learn more about wind energy challenges and competitions for middle and high schools through Kid Wind (http://www.kidwind.org/)

Collegiate Wind Competition: http://energy.gov/eere/collegiatewindcompetition

See what future career opportunities may exist in wind energy by visiting the Wind Career Maps (http://energy.gov/eere/wind/wind-career-map)
GTO Initiatives & Education

• GTO Reduce costs and risks of geothermal development
  o GTO Programs:
    – Hydrothermal;
    – Enhanced Geothermal Systems;
    – Low-Temperature and Coproduced
      ▪ Deep Direct-Use
      ▪ Ground Source Heat Pump Systems
    – Systems Analysis
      ▪ Student Design Competitions
  o Small Business Innovative Research
Take part in it!

Celebrate National Hydrogen & Fuel Cell Day on 10/8 (Held on its very own atomic-weight-day)

Learn more: energy.gov/eere/fuelcells
The U.S. Department of Energy (DOE) National Science Bowl® (NSB) seeks to encourage middle and high school students to expand their knowledge of math and science, expose students to careers relevant to DOE’s mission, and raise the visibility of academic achievement in the sciences through a nationally prestigious academic event.

Teams of four students each face off in a fast-paced question-and-answer format where contestants are quizzed on their knowledge of math and a range of science disciplines including biology, chemistry, Earth and space science, physics and energy (including DOE-related questions.)

Each year, the NSB attracts more than 14,000 students nationwide. At the high school level, the 2017 National Science Bowl involved more than 9,000 students and at the middle school level, more than 5,000 competitors.
Zero Energy Schools Accelerator Resource Toolkit

– Existing resources including
  • DOE/NREL Zero Energy Schools Feasibility Study
  • DOE Financing energy upgrades in K-12 school districts
  • DOE Business case for energy efficient building retrofit and renovation
  • DOE/NREL/Seventhwave Performance Based Procurement Process
  • DOE/NREL Myths about energy in schools
  • NBI – ZNE for Schools and Public Buildings
  • EPA – Healthy Schools, Healthy Kids

– New resources
  • Zero Energy Schools Design Guide
  • ZeroEnergy.org
  • Case studies (print and video)
K-12 School Districts are Eligible

**Known** – Still large potential for industrial/commercial energy savings, historic improvement focus has been on ad hoc projects, low hanging fruit

**We believe** - Best way to achieve the fullest EE potential is to adopt programs & policies that improve energy performance on a continuing basis

**Value of 50001 Ready Program** – Positions your organization to achieve and sustain energy and cost savings through informed systematic decision making

**What is 50001 Ready?**

- **DOE program assisting and recognizing organizations for adopting a culture of continuous energy performance improvement**

- **Self-attesting, no certifications, no external audits, do-it-yourself with DOE free online resources**

- **Online energy management tools and guidance, can be rebranded/repurposed if desired**

Participants are eligible for technical assistance. Contact Crystal Mcdonald at crystal.mcdonald@ee.doe.gov for more information.