

# ENERGY IS EVERYWHERE!

U.S. DEPARTMENT OF  
**ENERGY**

Energy Efficiency &  
Renewable Energy



## Connecting with Science & Technology Centers

March 19, 2015



Webinar Series sponsored by  
Housing and Urban Development,  
Department of Energy and  
Department of Education

# Webinar Agenda

- Welcome and Intro to Webinar Series (HUD)
- Overview of Association of Science and Technology Centers (ASTC)
  - Ann Hernandez, Program Manager, Professional Development, ASTC
- Highlights from Museums
  - Kathy Dawes, Educational Outreach Coordinator, Palouse Discovery Science Center, WA
  - Kristin Leigh, Deputy Director & Director of Community Engagement, !Explora!, NM
  - Karen Hays, Program Development Manager, Denver Museum of Nature and Science, CO
- Q & A



You are on mute! Use your webinar bar to fill out poll or chat to send in a question.

Email [energyliteracy@ee.doe.gov](mailto:energyliteracy@ee.doe.gov) about the Energy is Everywhere Webinar Series

# Welcome

- Why are we talking with the **Association of Science & Technology Centers?**

## 1. Resources and Programs to share

- ✓ Located across the country and internationally
- ✓ ASTC members include science centers and museums and also zoos, aquariums, planetariums, botanical gardens, children's museums and more!
- ✓ Great Resources for Public Housing and Low-Income residents:
  - Mission is to serve the public
  - Resources and programs to engage

# Welcome

## 2. Ties into Science, Technology, Engineering, & Math (STEM):

- Report by the President's Council of Advisors on Science and Technology (PCAST) estimates there will be **one million fewer** STEM graduates **over the next decade** than U.S. industries need.
- The **demand** for professionals in STEM fields is projected to **outpace the supply of trained workers and professionals.**
- **STEM competencies are increasingly required for workers both within and outside specific STEM occupations.**
- *“Progress on STEM is critical to building a just and inclusive society: STEM participation and achievement statistics are ‘especially disturbing’ for women and minorities, who are substantially underrepresented in STEM fields.”*
- **From:** President's National Science and Technology Council, 2013 5-year Strategic Plan:  
[http://www.whitehouse.gov/sites/default/files/microsites/ostp/stem\\_stratplan\\_2013.pdf](http://www.whitehouse.gov/sites/default/files/microsites/ostp/stem_stratplan_2013.pdf)



# **Energy is Everywhere: Connecting with Science and Technology Centers**

**March 19, 2015**

**Ann Hernandez**

**Program Manager, Professional Development  
Association of Science-Technology Centers**



# About ASTC

- A Washington, DC-based nonprofit association representing nearly 500 science centers and museums in 46 countries across the globe.
- Members include not only science centers and museums, but also nature centers, aquariums, planetariums, zoos, botanical gardens, natural history museums, and children's museums, as well as companies, consultants, and other organizations that share an interest in informal STEM education.





# About ASTC

- ASTC provides a **collective voice, professional support, and programming opportunities** for science centers, museums, and related institutions whose innovative approaches to science learning inspire people of all ages about the wonders and the meaning of science in their lives.



# Why Science Centers Matter

- Science centers ignite long-term interest in the STEM fields.
- Science centers are places where play and academics come together.
- Science centers foster strong science teachers.
- Science centers provide learning and exploration for a lifetime.
- Science centers offer global solutions to local problems.





# Why Science Centers Matter

- Science centers are uniquely positioned to raise awareness, understanding, and interest levels in the STEM (and energy!) fields.
- Science centers specialize in cultivating critical thinking and analytical skills—two of the most important abilities required of a future STEM workforce.
- Science centers are helping to prepare a new generation of responsible global citizens who will be able to address the problems that will face our world over the next century.

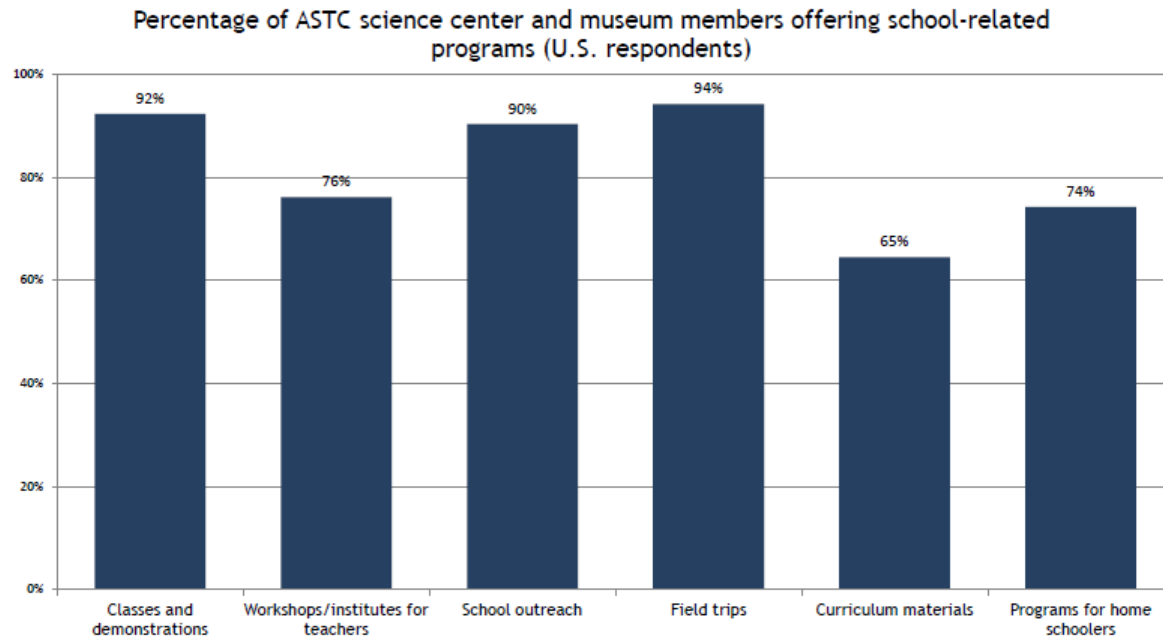


# The ASTC-DOE Partnership

An opportunity to work jointly to promote energy literacy for the 21<sup>st</sup> century workforce and citizenry.

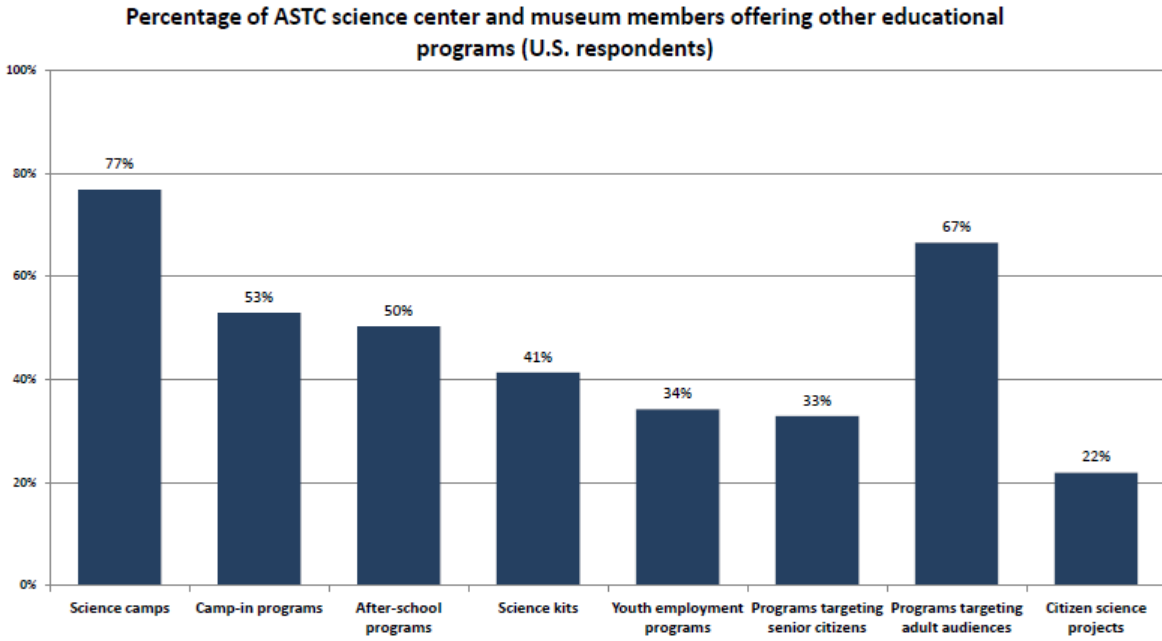
- Energy Literacy Empowerment Initiative
- STEM Mentoring Café
- Minorities in Energy STEM and Energy Literacy Series

# Science Centers and Education





# Science Centers and Education



# Energy Literacy

museum of science+industry chicago

visit the museum | what's here | online science | education | join + support

Exhibits

### Future Energy Chicago

exhibit overview | energy garden | simulation game | resources

**Simulation Game**

The centerpiece of *Future Energy Chicago* is an interactive, multiplayer simulation game that challenges you to reimagine and reinvent Chicago's energy landscape. Working in teams in this collaborative and competitive experience, you'll compete to maximize energy efficiency while keeping in mind the trade-offs of your choices. Using real-world information and data from across the subjects it covers, the simulation game is grounded in the ways energy works in our lives, and can be updated to reflect current prices and conditions. Watch your team's results in real time—if your team ends the game with the most energy left in your tank, you win!

*The simulation game requires an additional ticket, which can be added to a Museum Explorer Ticket package. The simulation is a timed-entry experience available only at certain times during the day.*

**Future House**  
Play the role of an energy consultant as your team explores a virtual house, inside and out, to find energy savings.  
[Learn More](#)

**museum hours**  
Daily from 9:30 a.m. to 4 p.m.  
Open daily except Thanksgiving and Christmas  
[More Information](#)

**museum location**  
5700 S. Lake Shore Drive  
Chicago, IL 60637  
[Getting Here](#)

[buy tickets online](#)

**happening now** | coming soon

- Treasures of the Walt Disney Archives**  
Explore nine decades of The Walt Disney Company's history and artifacts.  
[Learn More](#) | [Buy Tickets](#)
- D-Day: Normandy 1944**  
Seventy years ago, a historic landing changed the world.  
[Learn More](#) | [Buy Tickets](#)
- Flight of the Butterflies**  
Travel the length of a continent with a cloud of millions: monarch butterflies in migration.  
[Learn More](#) | [Buy Tickets](#)

[Full Calendar](#)

50th Anniversary

Today's Hours: Closed

[Buy Tickets Online](#) | [Calendar of Events](#) | [Membership](#) | [Volunteer & Employment](#) | [COSI Blog](#)

VISIT COSI | EXHIBITS & LIVE SHOWS | FOR FAMILIES | FOR EDUCATORS | FOR SCOUTS

Included with General Admission or Membership | [BUY/RENEW MEMBERSHIP](#) | [HOURS & RATES](#)

# ENERGY explorers

Your ENERGY choices matter

COSI's new Energy Explorers exhibition focuses on how energy powers the world around us—from the transportation we take, to the products we buy, to the ways we live and work. You'll learn where energy comes from, how energy powers the world, and why the energy choices you make are choices that matter.



# Career Ladder Programs

exploratorium Like 33 people like this. Be the first of your friends.

## HIGH SCHOOL EXPLAINERS

Who are the High School Explainers, what do they do, and why is the experience life changing for so many of them?

**WHAT'S AN EXPLAINER?**





High School Explainers, the Exploratorium's youngest employees, are a diverse group of students who engage visitors at exhibits, lead demonstrations, and run many museum operations.

Some are interested in science; all have a spark for learning new things. In keeping with the Exploratorium's philosophy, they build their own skills while learning to help others.

[Learn more about the program.](#)




**WHAT DO THEY DO?**



Explainer-made videos offer a behind-the-scenes look at their daily demos and projects.

[Learn more about what they do.](#)

**HEAR THE STORIES**



"It's been life changing in ways I didn't think it would be." —Clare

[Hear more stories.](#)







# Volunteer Opportunities



The New Austin Children's Museum





## How to contact your local science center:

1. Search [www.astc.org](http://www.astc.org) for centers in your area
2. Explore the science center's website for existing programs and memberships
3. Contact their staff- Director of Education/Programs, Outreach Manager, Group Reservations, Membership Manager

### FIND A SCIENCE CENTER

Country  U.S. State (if applicable)

Keyword Search

**SEARCH**

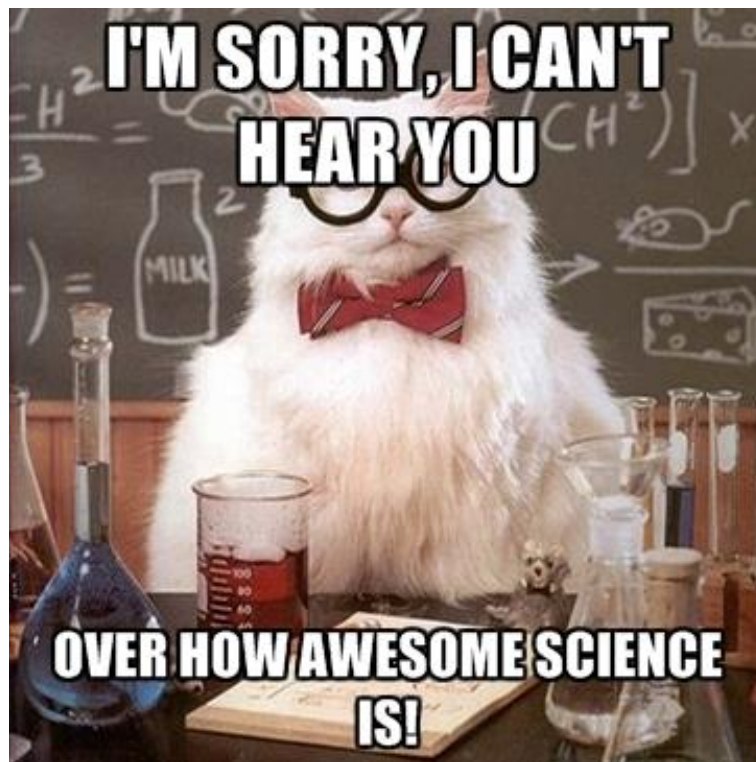
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For participants in the reciprocal free admission program, please visit the [Travel Passport Program page](#). Please note that not all ASTC-member science centers and museums participate in the Passport Program.



**Ann Hernandez**  
**Program Manager, Professional Development**  
**Association of Science-Technology Centers**  
**(202) 783-7200 x126**  
**[ahernandez@astc.org](mailto:ahernandez@astc.org)**





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Follow ASTC on Google+  
[Gplus.to/ASTC](https://plus.google.com/ASTC)



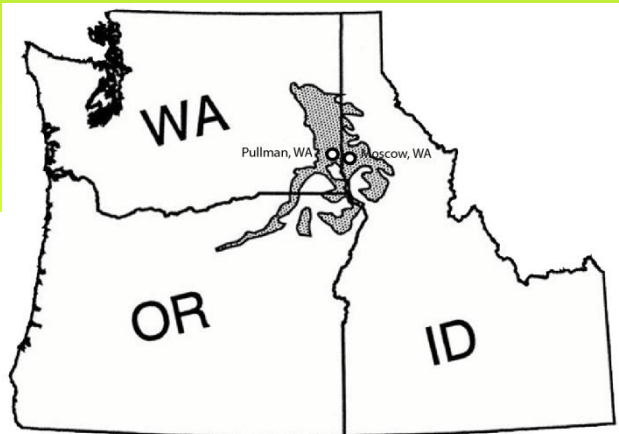
Like ASTC on Facebook  
[Facebook.com/sciencecenters](https://facebook.com/sciencecenters)



Follow @sciencecenters on Instagram

# Palouse Discovery Science Center

## Pullman, WA





# We provide field trips, Family Science Saturday events, and outreach programs and portable exhibits for:



Libraries

Schools

After-school  
programs

Family  
Science  
Nights

County Parks

Girls Scouts

Science  
Clubs

Community  
Events

# Current Outreach programs focus on “Energy for the Future”



**Snap Circuits  
Green**



**Chemical  
Energy**

**Hydrogen  
Power:  
Fuel Cell Cars**





# Wind Power



# Solar Power





# Project SOS: Making Connections Using the Science Of Sustainability

**make a difference**



radiation  
convection  
conduction

**Science of Sustainability**



This material is based on work supported by the  
National Science Foundation under Grant No. DRL-1223290

**Principal  
investigators:**

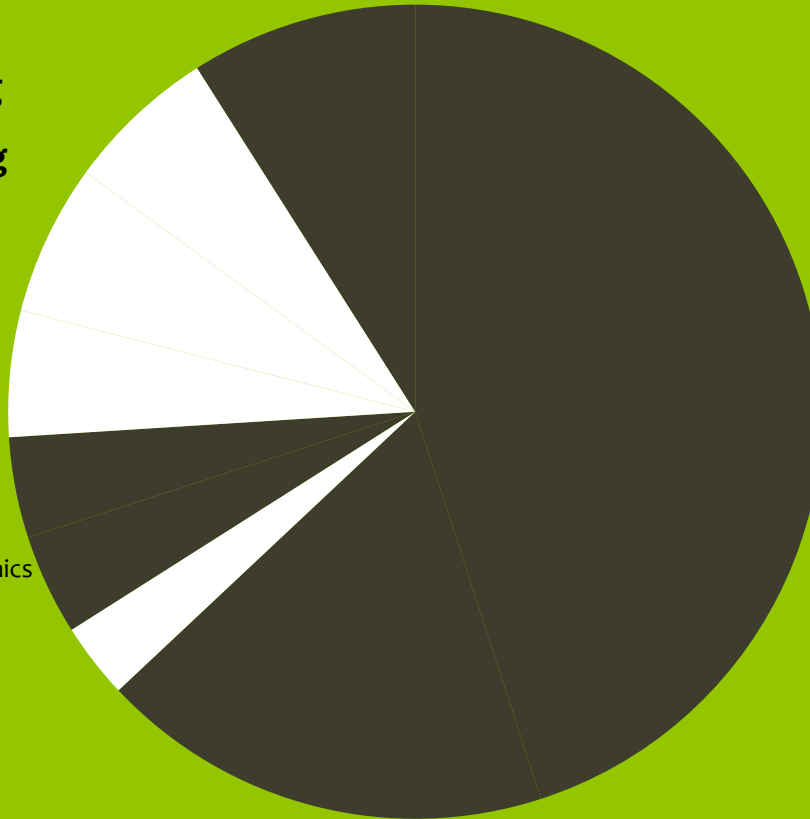
**Kathy Dawes, PDSC  
Kathleen Ryan, WSU  
Christine Berven, UI**

**Funded by NSF  
Grant No.**

**DRL-1223290**

# Home energy use related to Heat

- Space heating
- Water heating
- Wet cleaning
- Refrigeration
- Cooking
- Other
- Lighting
- Computers/Electronics
- Space cooling



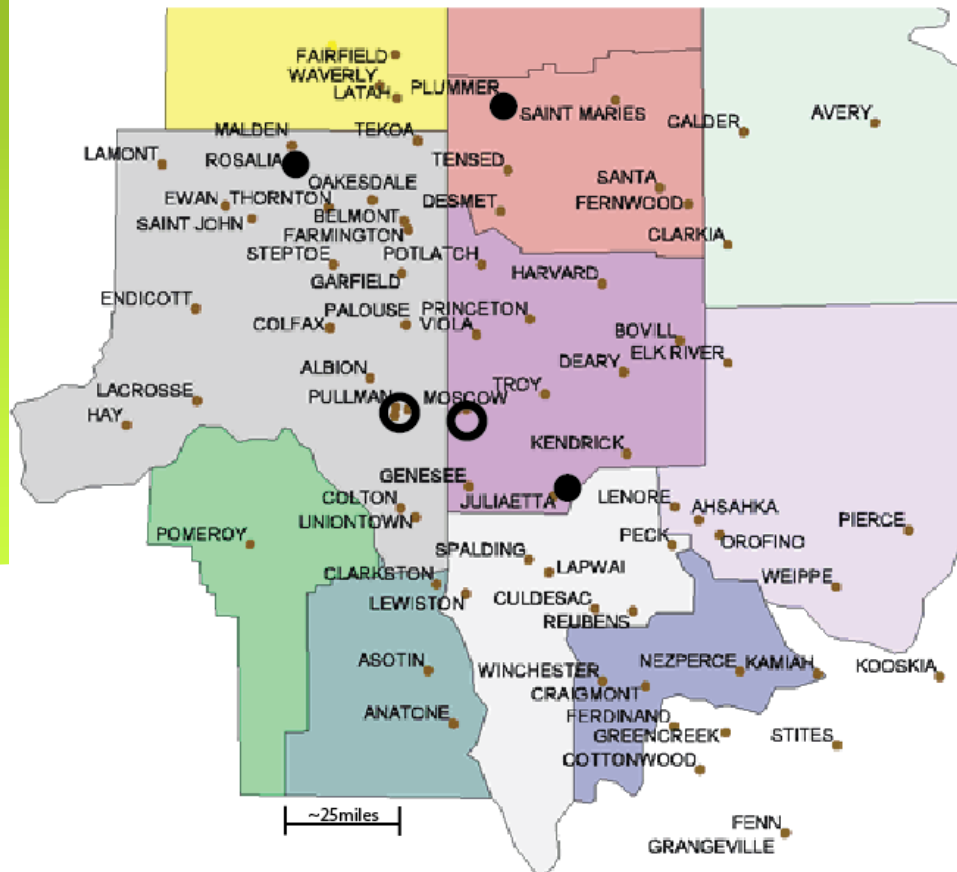
80%



# Our Audience

Population Data (2010 Census):

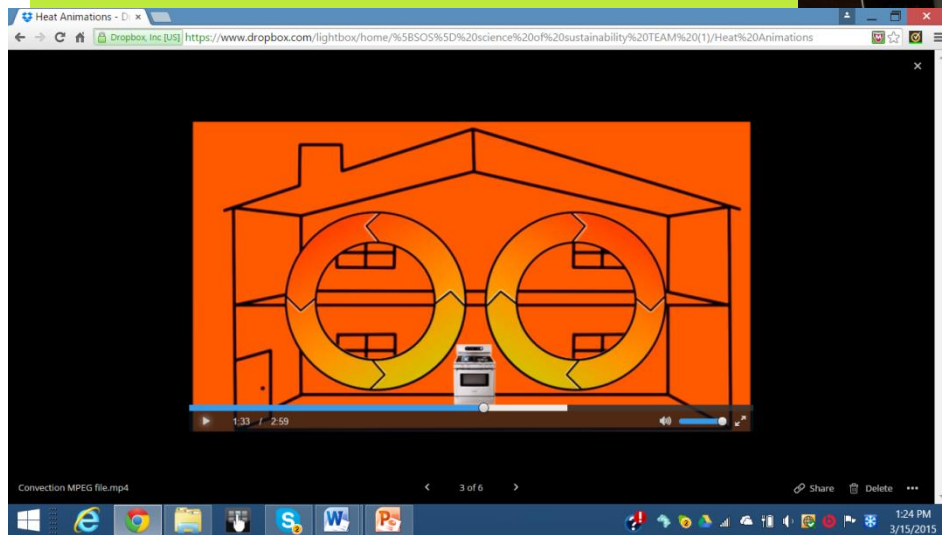
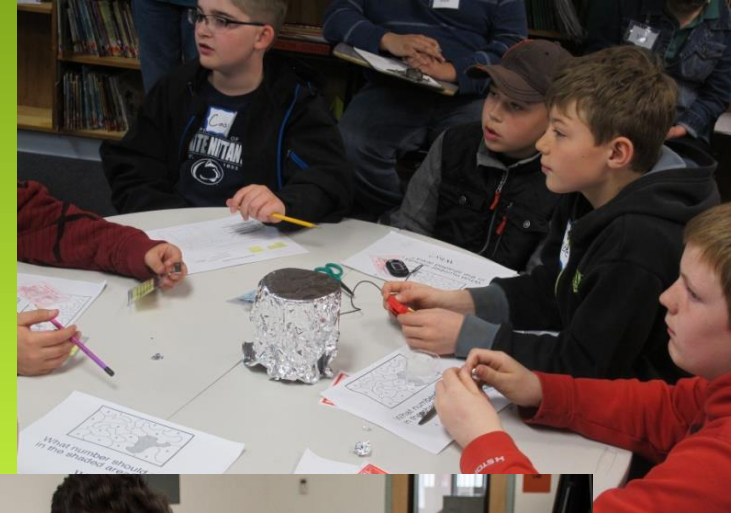
- 1,599 Coeur d'Alene Reservation  
(Plummer/Worley/Tensed/Desmet)
- 882 Kendrick/Juliaetta, ID
- 550 Rosalia, WA
- Pullman, WA
- Moscow, ID





# DAY 1: In the Community

## Exploring Heat Energy

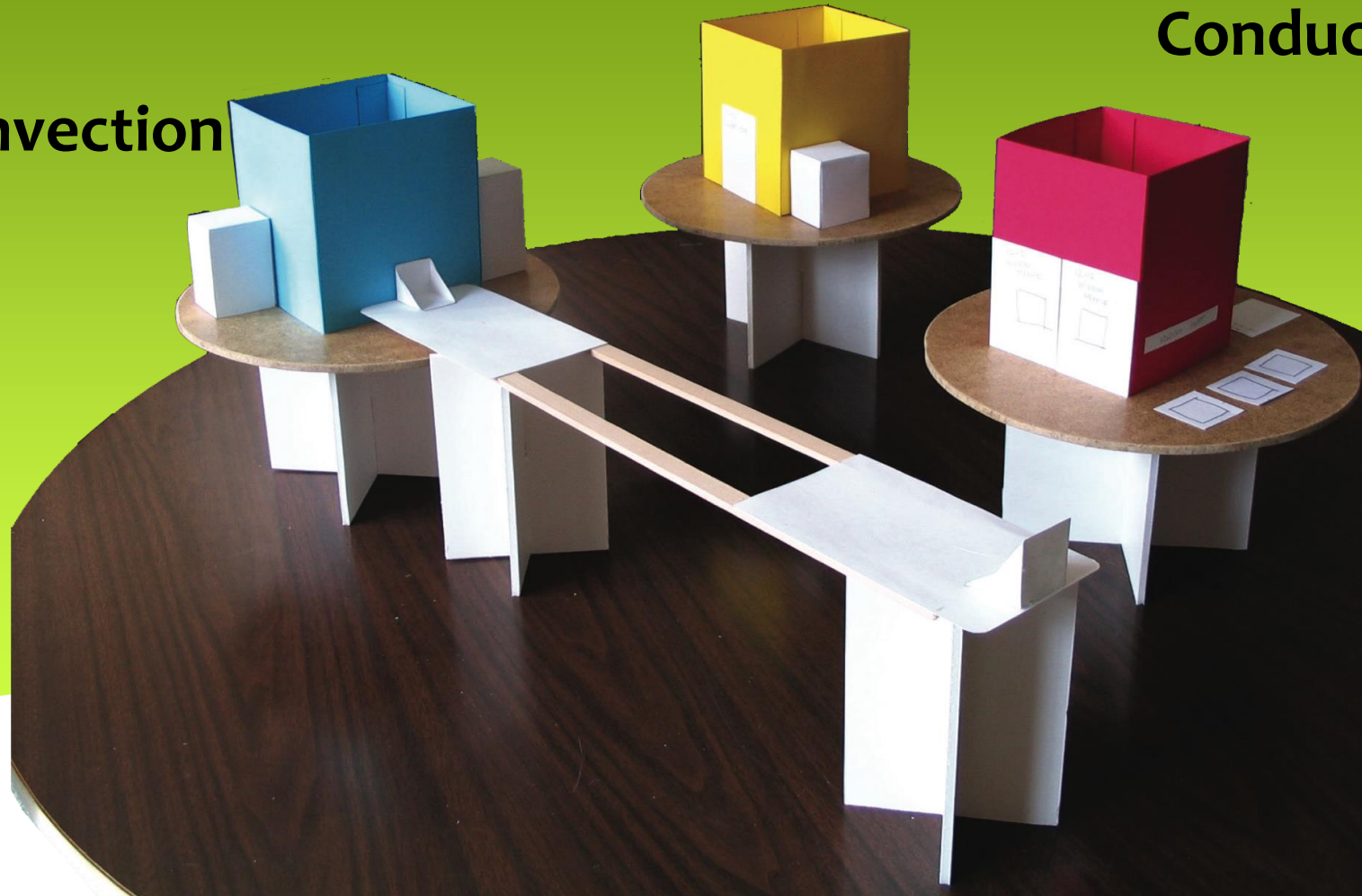


# Exhibit Prototypes

Radiation

Conduction

Convection





# Experiencing the Exhibits

## Conduction Experts



## Convection Experts



## Radiation Experts



# Sharing Expertise





# Model House Challenge

Testing the house



Selecting materials



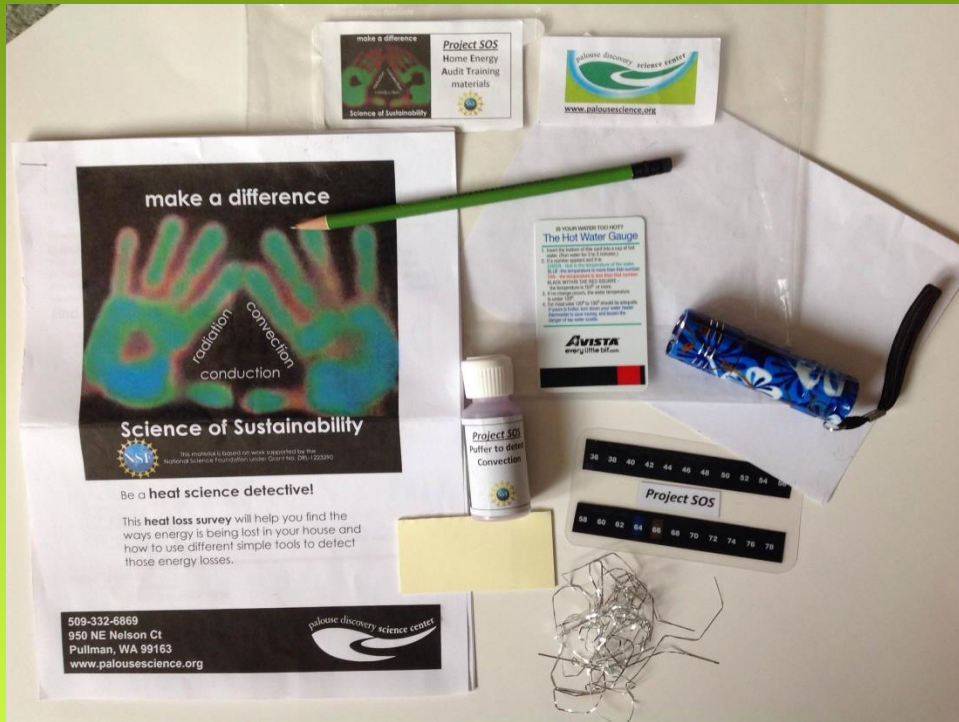
Fixing the house

Reporting results

Checking the house after improvements



# HEAT Kits to take home





# DAY 2: At the science center

What did you  
find out?

What can you do  
about it?

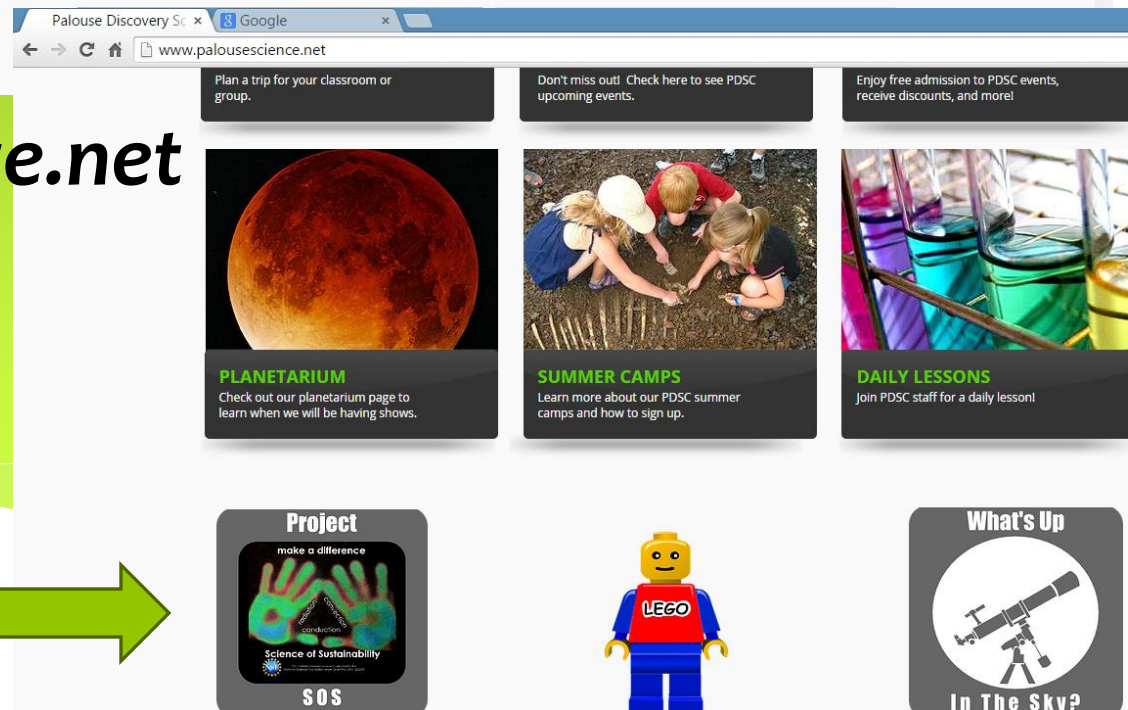
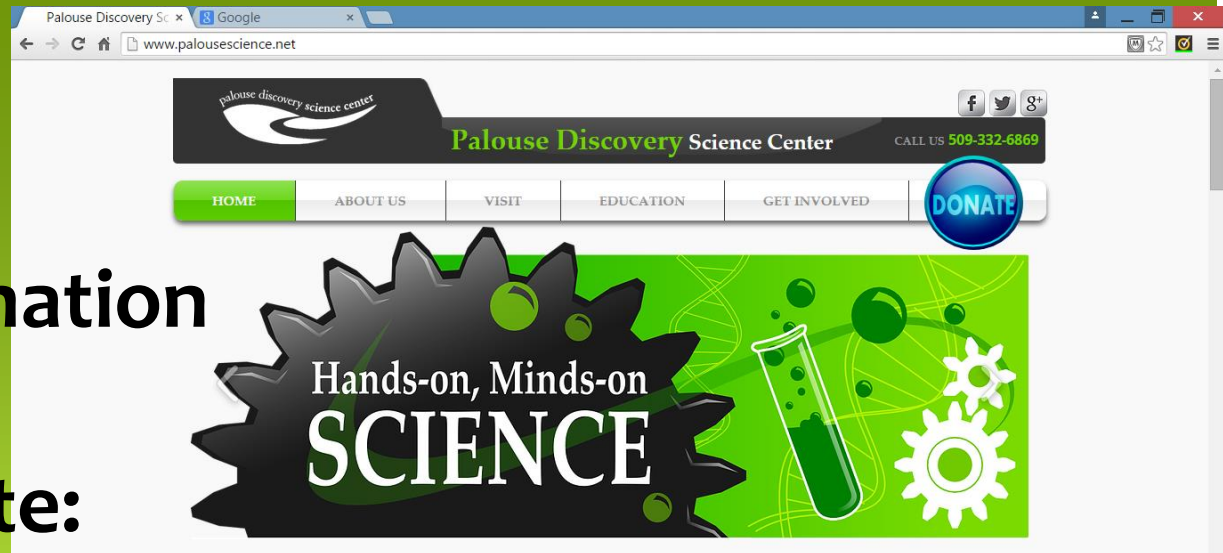


## Career Opportunities!

For more information  
and resources,  
go to our website:

[www.palousescience.net](http://www.palousescience.net)

Scroll down to:  
Project SOS



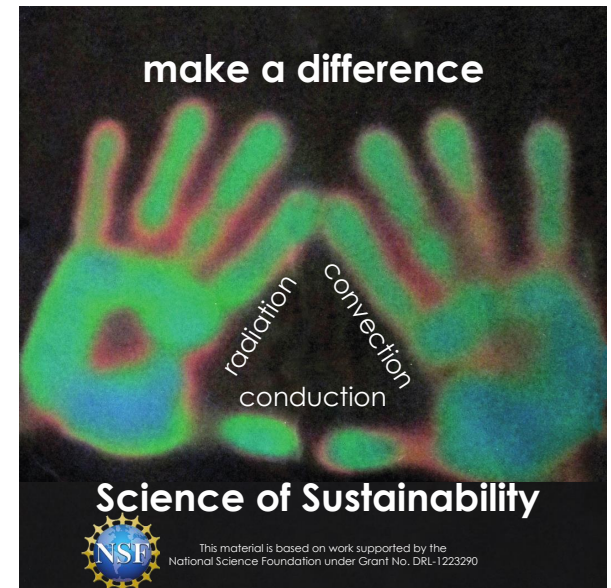
# For the Future:

- ▶ Develop final versions of project components
- ▶ Recruit family participants as well as teens
- ▶ Expand the project by taking it to other science centers and organizations with similar goals to promote sustainable energy use

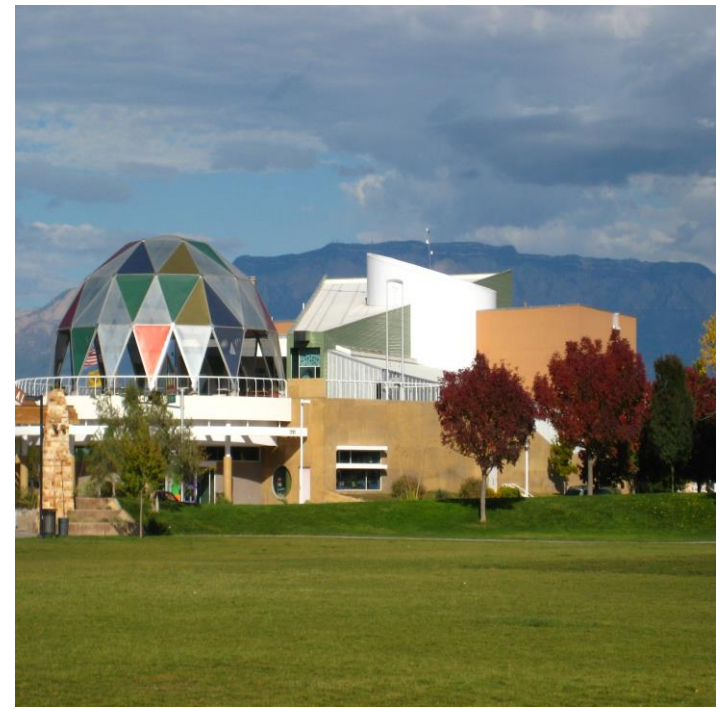


# Contact:

- \* **Kathy Dawes**
- \* **Educational Outreach Coordinator**
- \* **Palouse Discovery Science Center**
- \* **Pullman, WA**
- \* **[outreachpdsc@gmail.com](mailto:outreachpdsc@gmail.com)**
- \* **208-310-2922**







# Explora Albuquerque, NM

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KRISTIN LEIGH

DEPUTY DIRECTOR AND DIRECTOR OF COMMUNITY  
ENGAGEMENT



# Community Partner Membership Program

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- Increases access to Explora by working through partner agencies to provide no-cost memberships to low-income families, providing unlimited access to Explora's safe, science-rich learning environment
- 13,000+ memberships have been provided to clients of partner organizations (free, unlimited admission to Explora for up to six people, regularly valued at \$90)
- Primarily funded through Explora's operating budget, with other funding from the State of New Mexico, the United Way of Central New Mexico, and others
- Examples of *Community Partners*:
  - Nurse Family Partnership
  - ABQ Housing Authority
  - Albuquerque Public Schools Title I Schools
  - Over 70 other organizations



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# Partnership with Albuquerque Housing Authority (AHA)



- Partnership established September 2013
- Albuquerque Housing Authority (AHA) Family Self-Sufficiency Program serves appx. 5,000 people
- AHA offered Explora memberships to any of those clients that included families with children
- 151 AHA families requested Explora memberships by calling the City's 311 phone line; AHA provided Explora with a spreadsheet of these families, and Explora processed and mailed membership cards

# AHA Visitation Rates

9/1/13-9/1/14

	Total Visits	Total Number of People
AHA	184	721



Total Visits	Total # of People
234	912

9/2/14-3/10/15

	Total Visits	Total Number of People
AHA	50	191

AHA utilization rate: 1.5 avg. family visits/year  
 Paid member utilization rate: 4.4 avg. family visits/year

Working to increase *Community Partner* rates to more closely match those of paid members

# Future plans

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Explora and AHA are collaborating to plan a **Family Science Night** at Explora for client families. Explora will open its doors for an evening event that gives families the opportunity to learn and discover together--and have the whole museum to themselves! The 151 member families will be invited, as will AHA families through requested memberships, in the hope that Explora will encourage members, as well.





# Getting Connected with the Denver Museum of Nature & Science

Karen Hays





D E N V E R   M U S E U M   O F   N A T U R E   &   S C I E N C E



# Connecting



# Free Days

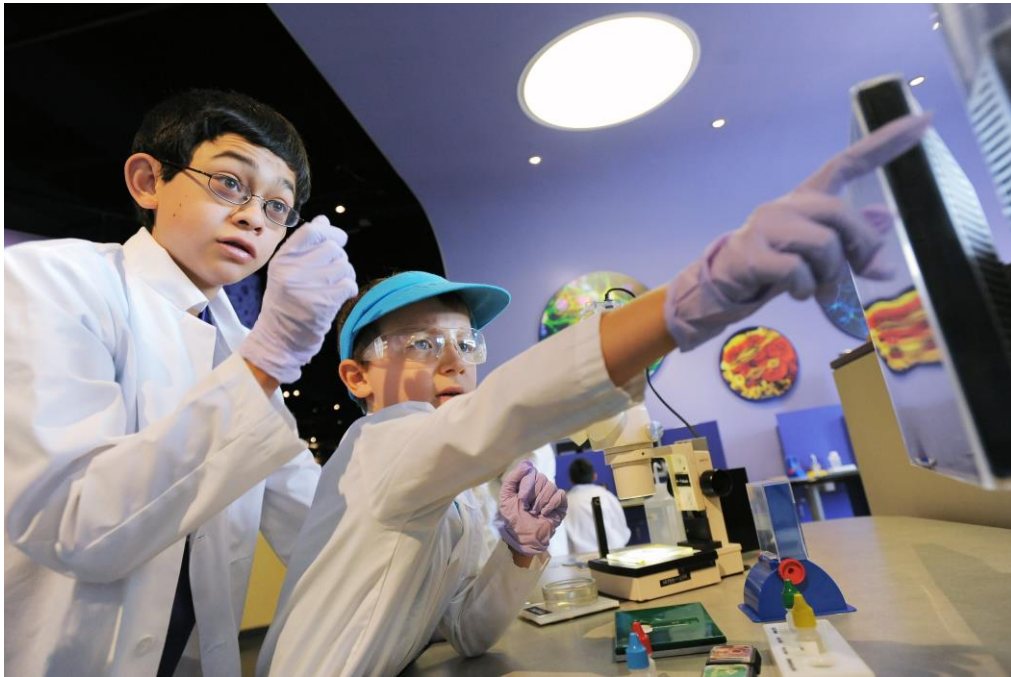














D E N V E R   M U S E U M   O F   N A T U R E   &   S C I E N C E



Find out more  
[www.dmns.org](http://www.dmns.org)



# Questions and Contact Us

**Questions: Type in the questions/chat box.**

**We are interested in your feedback on the  
Energy Is Everywhere Series!**

**[energyliteracy@ee.Doe.gov](mailto:energyliteracy@ee.Doe.gov)**