

The logo for the Northwest Advanced Renewables Alliance (NARA) consists of the letters "NARA" in a white, sans-serif font, centered within a dark gray rectangular box. A thin red horizontal line is positioned at the bottom edge of the gray box.

# Energy Education and Bioenergy Literacy: Starting Now

NARA Education Team  
May 3, 2016, 1:15 – 1:45 pm

This work, as part of the Northwest Advanced Renewables Alliance (NARA), was supported by the Agriculture and Food Research Initiative Competitive Grant no. 2011-68005-30416 from the USDA National Institute of Food and Agriculture.

Northwest Advanced Renewables Alliance





# Session Roadmap

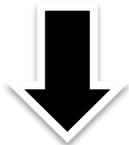
**Who is the NARA Education Team?**



**Conference Goals**



**Defining (Bio)Energy Literacy**



**Role of Energy Education**



NARA



### Teams



#### Education

Engage citizens, meet future workforce needs, enhance science literacy in biofuels, and help people understand how they're going to fit into the new energy economy.



#### Sustainability Measurement

Evaluate and assess environmental, social, and economic viability of the overall wood to biofuels supply chain, guiding the project as it goes forward.



#### Feedstocks

Take a multi-pronged approach for the development and sustainable production of feedstocks made from wood materials, including forest and mill residues, municipal solid waste, and specialty energy crops.



#### Conversion

Provide a biomass-derived replacement for aviation fuel and other petroleum-derived chemicals in a way that is economically and technologically feasible.



#### Outreach

Serve as a conduit between researchers and community stakeholders, helping to transfer the science and technology of biofuels and important co-products to communities in the Northwest.



# BIOENERGY IN EDUCATION

## Facing the Future

MS HS UG GR PR  
A NW regional nonprofit developing inquiry based curricula for grades 6-12 on biofuel development.

[www.facingthefuture.org](http://www.facingthefuture.org)

## MOSS

GS MS HS UG GR PR  
Promotes biofuel literacy to K-12 students, Grad students, and teaching professionals.

[uidaho.edu/cnr/moss](http://uidaho.edu/cnr/moss)

## BioFuels SURE

GR MS HS UG GR PR  
Summer research experience for undergraduates aimed at giving them hands on skills in biofuels and bio-products research.  
[nararenewables.org/ed](http://nararenewables.org/ed)

## IDeX

GS MS HS UG GR PR  
A year long course for UI and WSU students providing supply chain analysis for an emerging wood products to biofuels industry.  
[idexstudio.org](http://idexstudio.org)

## Imagine Tomorrow with BioFuels

GS MS HS UG GR PR  
Engages high school students to create solutions for a developing biofuel industry.

[www.imagine.wsu.edu](http://www.imagine.wsu.edu)

## Salish Kootenai College

GS MS HS UG GR PR  
This tribal university provides research opportunities tied to biofuels and bio-products from woody biomass.  
[www.skc.edu](http://www.skc.edu)

## Western Washington University

GS MS HS UG GR PR  
Offers undergraduate degrees in renewable energy with science and policy tracks.

[www.huxley.wvu.edu](http://www.huxley.wvu.edu)

[nararenewables.org](http://nararenewables.org)



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# USDA-AFRI Regional Bioenergy System Coordinated Agricultural Projects

(CAPS)



**Non-food dedicated biomass feedstocks:**

- Pine
- Eucalyptus
- Sugar Cane/Energy Cane
- Forest Residues
- Willow
- Perennial Grasses
- Beetle-killed Pine
- Poplar
- Sorghum



# BioEnergy in STEM Education Education Track Goals

- Learn about the field of wood-based biofuels.
- Gain background knowledge in bioenergy and biofuels.
- Share educational resources and strategies for teaching about energy/bioenergy/biofuels.



# General Conference Agenda

## Tuesday, May 3

1:15 pm	Education Track Sessions
2:45 pm	Break
3:15 pm	Education Track Sessions
4:45 pm	Break
5:30 pm	Poster Presentation/Networking Reception

## Wednesday, May 4

7:00 am	Breakfast
8:00 am	Education Sessions
9:30 am	Break
10:00 am	Education Sessions – Panel Discussion
12:00 pm	Lunch
1:00 pm	Whole Group Conference Session
4:45 pm	Adjourn



# Education Track Warm Up





# What is energy literacy?

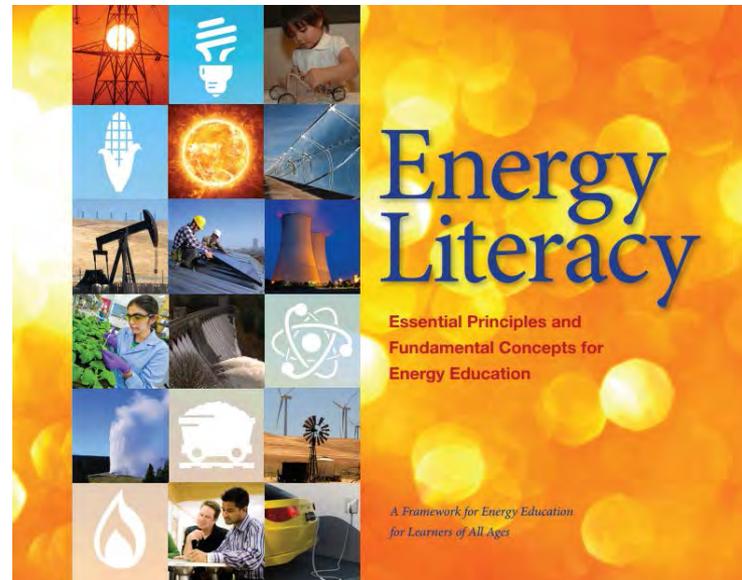
Define energy literacy:

- What can an energy literate person **do**?
- What does an energy literate person **know**?
- What **attitudes** are embodied by an energy literate person?



# Energy Literacy: Essential Principles and Fundamental Concepts for Energy Education

“Energy literacy is an understanding of the nature and role of energy in the universe and in our lives. Energy literacy is also the ability to apply this understanding to answer questions and solve problems.” (US DOE, page 1)



<https://energy.gov/energyliteracy>



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# Discussion Questions

- What is the role of education in promoting energy literacy?
- Is bioenergy/biofuel a game changer?
- How/Does your definition of energy literacy change if you want to specifically address bioenergy/biofuel?

# What is a biofuel?



Photo: Justin Hougham



Photo: Michael Gil\_Flickr.com

**Biofuel:** Fuel made from biomass (instead of petroleum/fossil fuels), used mostly for transportation.

**Biomass:** Organic nonfossil material of biological origin constituting a renewable energy source.

Burned to release a more usable form of energy:

Carbon Combustion:  $C + O_2 \rightarrow CO_2 + \text{heat}$

# Thank you!



“Ours is a world of 24-hour-news cycles, global markets, and high-speed Internet. We need to look no further than our morning paper to see that our future, and the future of our children, is inextricably linked to the complex challenges of the global community. And for our children to be prepared to take their place in that world and rise to those challenges, they must first understand it.”

**Roderick Paige,**  
former us secretary of education

