



Reviewing the E3A User Guide

Milt Geiger, M.S., C.E.M.
UW Extension
Energy Extension Coordinator
April 14, 2014
Fairbanks, AK

Where did E3A come from?



Torie Haraldson, M.S.- MSU Extension
E³A Coordinator



Mike Vogel, PhD - MSU Extension
Housing & Environmental Health Specialist

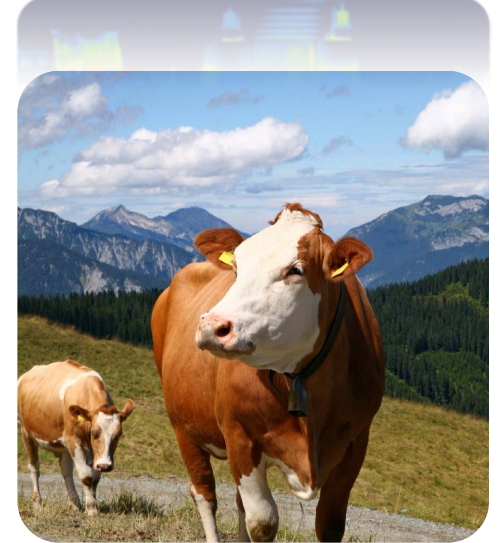
- WSARE Professional Development Project
 - Must share with other ag professionals
- Partnership initiative of *Montana State University Extension* and *University of Wyoming Extension*
 - Since 2010

Purpose of E³A

Enhance Extension energy capacity to provide outreach & education to nations consumers, dealing with energy conservation, efficiency and small renewable energy systems for your farm, ranch or home.

Complement and promote existing Extension Energy initiatives:

- States with Energy Programs
- eXtension CoPs
 - Home Energy
 - Farm Energy
- Extension Energy Summit



Energy Programming Opportunities Using the E3A Toolkit

- Programming Options
 - Basic workshops
 - Stand Alone Materials
 - Exploratory Workshops
 - Guided Exploration
 - Exploratory Workshops
 - Advanced Workshops
 - Hosted Workshops
 - Hosted Tours
 - Expert Workshops
 - Presented Material Workshops
 - Presented Tours
 - Clinics

Engaging Faculty in Energy

Using E3A, educators can:

- Assess Objectives and Risk
- Educate
 - Strategies for energy behavior change
 - Specific education on renewable topics
- Chose Their Own Adventure
 - Use stand-alone materials for low intensity
 - Moderate intensity 15-30 minute programming
 - Expert-level content



Elements of E³A

E³A: Exploring Energy Efficiency & Alternatives

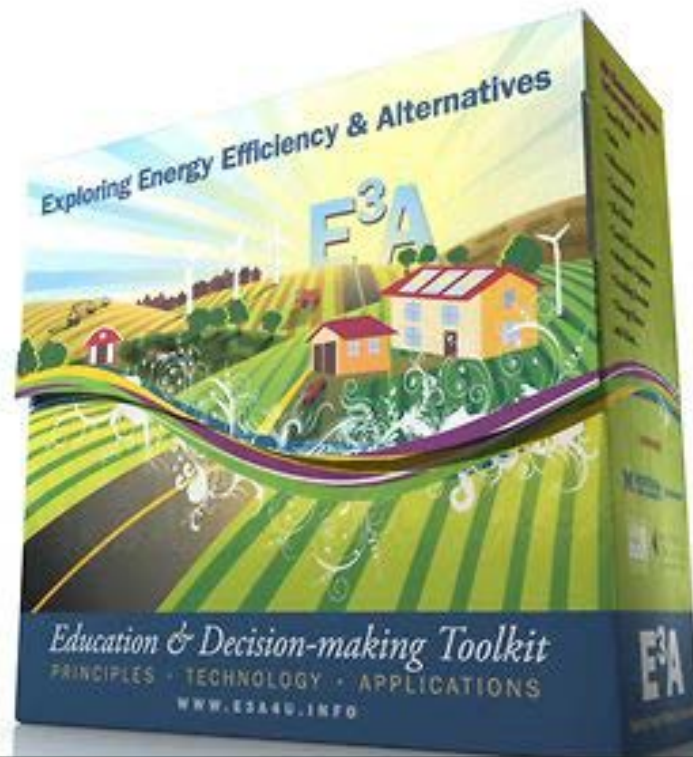


- Self-guided and self-contained planning/implementation toolkit.
- Teaching curriculum with evaluations.
- Dozens of downloadable consumer fact sheets.
- Links to expertise.
- Communication network
 - website
 - listserv
 - webinars

E³A: Exploring Energy Efficiency & Alternatives

**Let's Take a
Closer Look
at E3A.**

from WxTV PLUS



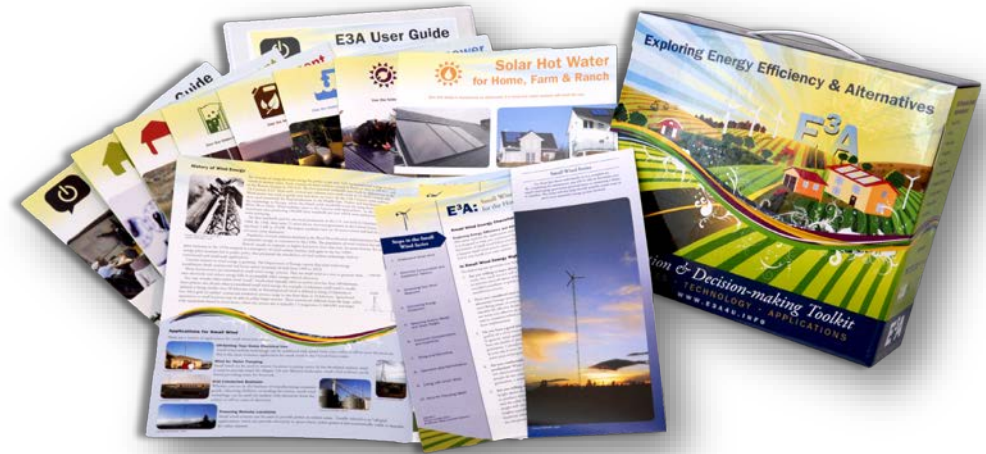
05:10

HD

<http://vimeo.com/42568162>

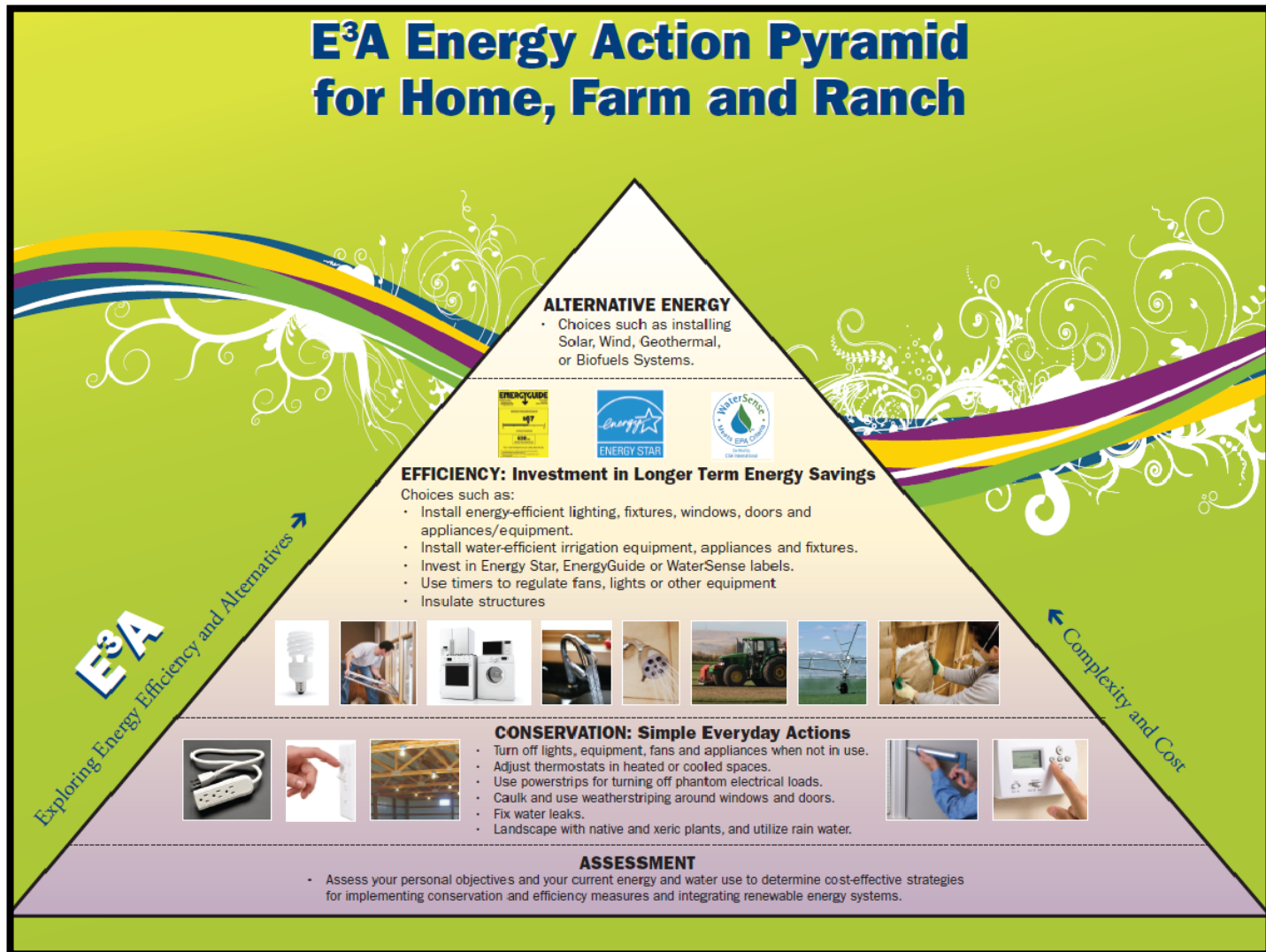
Self-Contained Toolkit Contents

- User Guide & Programming Materials
 - Map and General Energy Info.
 - Programming Resources
 - Online Resources (PPT, Links, etc.)
- Ten Technology Folders
 - Micro-hydro
 - Small Wind
 - Solar Electric (PV)
 - Solar Hot Water
 - Biodiesel
 - Anaerobic Digesters
 - Ground Source Heat Pumps*
 - Direct Use Geothermal*
 - Solar-powered livestock watering*
 - Wood heat
- Three Energy Efficiency Folders
 - Home Energy
 - Farm Energy
 - Mobile Home Energy
 - Irrigation Efficiency*
- Two Youth Programming Modules
 - Wind
 - Solar*



E3A – Fifteen folders, over 100 fact sheets, and lesson plans

“Building-Block” Resources – basic to advanced ...



- Material Design
 - Suitability Checklists
 - Step-by-Step Process for Understanding Key Considerations
 - Detailed Fact Sheets
 - Quick overviews
 - Sufficient detail to enable informed decision making



Wall-mounted solar hot water collectors in Bozeman, Montana.
Courtesy Liquid Solar Systems

Exploratory Workshops

Simple energy programming!!!

- Reasons to love exploratory workshops:
 - No experience necessary!
 - Insta-programming
 - Assess interest and needs while you educate
 - Workshop tools include:
 - Workshop planning guide
 - List of resources within E3A Toolkit
 - Program evaluation forms
 - Sign-in sheets

Advanced Workshops

- Advanced Workshops

“Advanced” refers to your level of engagement and preparation. You can have others provide expert content, but you should be able to assess the quality of that content and adequately prepare the event.

- Hosted Workshops

- Specialist Content

- Guest Speaker Content

- Guides for preparing a guest speaker on energy

- Hosted Tour

- Considerations for effective tours

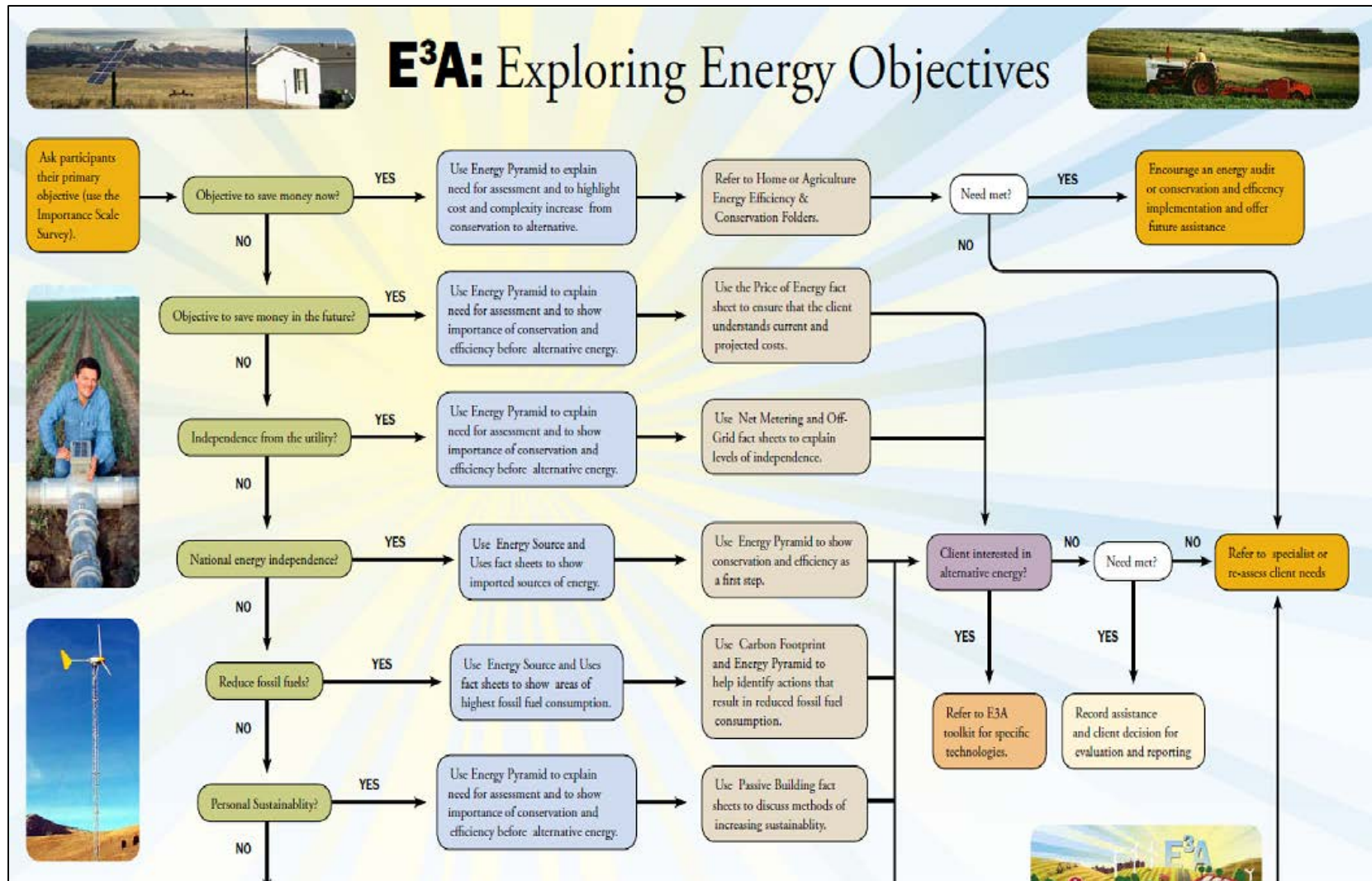
Expert Workshops



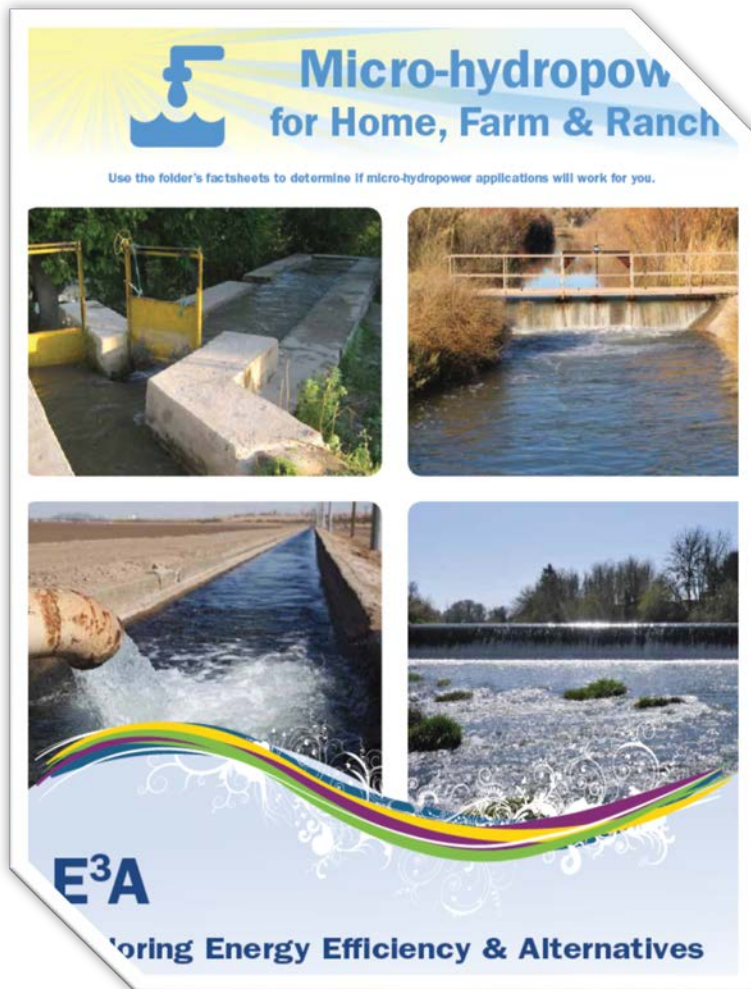
- Expert Workshops

Expert refers to your level of preparation and knowledge. In these workshops, you are the primary provider of content
- Presentation-Based Workshops
 - PowerPoint materials and links to additional resources provided online
- Full or Half-Day Clinics
- Tour – with you as the expert

Exploratory Workshops: Guided Exploration



Programming Folders



- Easy to reference specific topics
- Self-guided folders
- Step-by-step process for increasing understanding
- Consistent format and content structure

E³A Fact Sheets

Material Design

- Suitability Checklists
- Step-by-Step Process for Understanding Key Considerations
- Detailed Fact Sheets
 - Quick overviews
 - Sufficient detail to enable informed decision making

 **STEP 1**

Steps in the Solar Hot Water Series

- 1. Building & Site Assessment**
2. Conservation & Efficiency
3. System Options
4. System Sizing
5. Costs
6. Installation
7. Operation and Maintenance

E³A: Solar Hot Water Applications
the Home, Farm, or Ranch

Answering these questions will help you determine if a solar hot water system will work for your building or site.

1. Do you have a south-facing roof?

Because Montana and Wyoming are in the northern hemisphere, solar hot water collectors need to face south for maximum performance. This placement allows collectors to take full advantage of the sun's path in the sky. The sun shines longest on a building's south side. A slightly southeast or southwest placement will not result in significant loss in system performance.



*Courtesy DOE Energy Savers Website
<http://www.energy.gov/energysaver/getting-started/solar-hot-water/>
lastmodified: 08/08/2010 12:00*

Yes ____ Move to Question 2
No ____ A solar hot water system may not work well. You can add a south-facing roof extension or other structure if it can safely support collectors. Collectors can be mounted on a wall or the ground, but consider possible shading, snow drifts, lawn care, and vandalism.



Roof-mounted solar hot water collectors on a Wyoming home.

Collectors can be mounted on east- or west-facing roofs to face south, but they stick-up, are highly visible, and can be viewed as unattractive. Architects and builders can address this by designing "solar ready" buildings and integrating solar technology components into the design.



2. Does your roof have enough space for collectors?

For a residential system, the rule of thumb is that 20 square feet of collector roof/surface area is needed per person for the first two people in a household. Add 12-14 square feet of collector area for each additional hot water user.

Yes ____ Move to Question 3
No ____

If your roof is not large enough for the collectors, consider a smaller system, extending your roof, or mounting collectors on a wall or the ground.



*Wall-mounted solar hot water collectors in Beaverton, Montana.
Courtesy Liquid Solar Systems*



Grab and Go Lesson Plans

E³A Exploratory Program

15-Minute Workshop Plan

Segment	Est. Time	Activity	Materials
Introduction (Don't forget to pass around sign-in sheet!)	4 Minutes	<ul style="list-style-type: none"> Ask – "Have you ever wondered if a small wind system would work for you?" Discuss E3A Energy Pyramid 	<ul style="list-style-type: none"> E3A-UG.1 Fact Sheet
Understanding Key Factors in Small Wind	8 Minutes	<ul style="list-style-type: none"> Review Small Wind Checklist 	<ul style="list-style-type: none"> E3A-SW.0 Fact Sheet
Review and Evaluation	3 Minutes	<ul style="list-style-type: none"> Participants share thoughts or ask questions 	<ul style="list-style-type: none"> E3A Evaluation Form

30-Minute Variations

You can expand this program. Some variations might include:

- Make it local – Invite an installer or system owner. Use the Guest Speaker Confirmation Forms E3A-UGS-1.1.1 and E3A-UGS-1.1.2 to structure content.
- Add a webinar component with an Extension Energy Specialist
- Add a small group or facilitated discussion – Do participants have home energy concerns? What are they? What might be logical action steps given their concerns?

Sample of 30-Minute Variation

Segment	Est. Time	Activity	Materials
Introduction (Don't forget to pass around sign-in sheet!)	4 Minutes	<ul style="list-style-type: none"> Ask – "Have you ever wondered if a small wind system would work for you?" Discuss E3A Energy Pyramid 	<ul style="list-style-type: none"> E3A-UG.1 Fact Sheet
Understanding Key Factors in Small Wind	8 Minutes	<ul style="list-style-type: none"> Review Small Wind Checklist 	<ul style="list-style-type: none"> E3A-SW.0 Fact Sheet
Guest Speaker	15 Minutes	<ul style="list-style-type: none"> Guest Speaker 	<ul style="list-style-type: none"> Guest Speaker Confirmation Form
Review and Evaluation	3 Minutes	<ul style="list-style-type: none"> Participants share thoughts or ask questions 	<ul style="list-style-type: none"> E3A Evaluation Form

For more programming options, find PowerPoint presentations and supplemental references online at www.E3A4U.info.

Mail it out to confirm speaker

Ensure speaker understands expectations

Structure content in advance

E³A



Page | 9

E³A Exploratory Program

1.2.1 Guest Speaker Confirmation Form: Micro-hydropower Installer

Speaker:

Today's Date:

Thank you for agreeing to share your story about installing a micro-hydropower system with us. The following information may help you in preparing information to share with our group.

Date of Presentation:

Time:

Location:

Directions to Location:

Presentation Time (Length):

Question and Answer Time (Length):

of Participants Expected in the Group

Background: In this session, participants are exploring the basic concepts of how micro-hydropower works. They are interested in knowing more about key considerations concerning site selection, installing, and maintaining the system. Please do not specifically promote your business in this workshop, but you are encouraged to share your expertise and experience.

Your Topic:

Please share information on the following in your presentation:

- ☐ How many systems have you installed?
- ☐ What certifications should a micro-hydro system installer have?
- ☐ When you first talk with a potential customer, what do you want to know about them or their site?
- ☐ What types of things do you look at when visiting a site?
- ☐ What do you feel people should expect with regard to operation and maintenance?
- ☐ What challenges have you encountered during your work with hydropower?
- ☐ Could you describe your experience with permitting/licensing micro-hydro systems?
- ☐ What do you most enjoy about working in hydropower?
- ☐ What advice would you give to those who are interested in buying a micro-hydro system?

Please let the local Extension office know of any audiovisual equipment or other needs you might have at least two business days prior to the presentation.

Contact the local Extension Office at: _____

E3A-UGS-1.2.1

Press and Promotion Tools

4x3=4 column
(6.546") wide x 3" high

Small Wind Energy Workshop

Learn the benefits and challenges of using small wind energy from system owners, installers and industry expert, Joe Expert.

**November 18 at 7 p.m.
Community Center Great Room**

For more information,
call (406) 000-0000



This program is sponsored
in partnership with
Anywhere Foundation



**MONTANA
STATE UNIVERSITY**

EXTENSION

Learn about:

- Alternatives to power animal waterers or other small kW needs far from electricity
- How to offset home energy with small wind
- Saving energy or money: What's your motive?
- Proven performance and emerging technology: look at costs of installation and maintenance on proven systems and the newest systems available.

Larger sized display ads are more efficient for a one-time only event when run at least twice before the event. It could run once before a registration deadline, and then before the event, or just twice in the 10 days prior to the event.

2x6= 2 column (3.21") wide x 6" high



Small Wind Energy Workshop

Learn the benefits and challenges of using small wind energy from system owners, installers and industry expert, Joe Expert.

The presentation will include topics:

- Alternatives to power animal waterers or other small kW needs far from electricity
- How to offset home energy with a small wind system
- Saving energy or saving money: What's your motive?
- Proven performance and emerging technology: a look at costs of installation and maintenance on proven systems and the newest systems available.

**November 18 at 7 p.m.
Community Center Great Room**

For more information, call (406) 000-0000

This program is sponsored in partnership with
Anywhere Foundation



**MONTANA
STATE UNIVERSITY**

EXTENSION

1x3=1 column
(1.553") wide x 3" high

Small Wind Energy Workshop

Learn benefits and challenges
of using small wind energy.

**November 18 at 7 p.m.
Community Center Great Room**

RSVP call (406) 000-0000



2x2= 2 column (3.21") wide x 2" high

Small Wind Energy Workshop

Learn benefits and challenges of using small wind energy from system owners, installers and industry expert, Joe Expert.

**November 18 at 7 p.m.
Community Center Great Room**

RSVP call (406) 000-0000



**MONTANA
STATE UNIVERSITY**

EXTENSION

[xxx] Indicates a customizable field

[Date] [enter topic – e.g. small wind] Energy workshop at [location]

Summary: The [your office] Program and [State] University Extension will present a workshop on [topic] energy on [day of week], [month] [day] at the [location].

[Today's date] Contact: [Name], [Phone: (xxx) xxx-xxxx] or [e-mail]

To: [List the papers or media outlets you are sending this to in this space: News-dailies, AgMedia, News-local, NatResourcesNonmedia, Producers, Web.]
From: [Your Name], [Your Office] [Phone: (xxx) xxx-xxxx] or [e-mail].

BOZEMAN – The [enter state] State University [your office] Program, in conjunction with [state] University Extension, will present a workshop on [topic] energy.

The workshop will take place on [day of week], [month] [day] at the [location]. The event is [free or enter cost] and open to the public. Registration is suggested to guarantee copies of the class materials.

[Detail your program in this paragraph. Highlight a guest speaker near the beginning of the paragraph. If you have a quote from your guest speaker, use a new paragraph when you enter it.]

[Sample: Energy is a topic that is drawing increased attention – both because some energy costs are rising and because it is receiving more attention in public policy and the media. However, it can be difficult for consumers who want to make changes to their energy consumption to know where to start. This workshop will provide basic information that consumers can use to both better understand their own energy consumption and to identify action steps that take them in the right direction given individual objectives.]

[What's in it for them?]] For more information on the workshop and to RSVP, please contact [name] at [Phone: (xxx) xxx-xxxx] or email to [email].

###

E3A Evaluation

E³A Extension Energy Education Instructor & Program Evaluation

Name of Instructor: _____

Program Title: _____

Location/Date: _____

Are you an agriculture producer? ☐ Yes ☐ No

Evaluation of Program

Topic	BEFORE participating in this class					AFTER participating in this class				
	Circle one number for each statement					Circle one number for each statement				
	Low			High		Low			High	
Rate your level of understanding of this energy topic.	1	2	3	4	5	1	2	3	4	5
Rate your interest in energy conservation and efficiency.	1	2	3	4	5	1	2	3	4	5
I understand difference between renewable energy and energy efficiency.	1	2	3	4	5	1	2	3	4	5
Rate your interest in either taking a conservation/efficiency measure or installing a renewable energy system.	1	2	3	4	5	1	2	3	4	5

	Low			High	
To what extent did your technical understanding of this energy issue increase?	1	2	3	4	5
To what extent will the information from this class influence you to take action on an energy issue on your home, farm, or ranch?	1	2	3	4	5
To what extent will the material presented in this presentation be helpful to you in the future?	1	2	3	4	5

Instructor Evaluation

	Poor			Excellent	
How would you rate the overall program?	1	2	3	4	5
How well prepared was the instructor?	1	2	3	4	5
Was the presenter knowledgeable?	1	2	3	4	5

Interest in Additional Topics

Would you be interested in learning more about the following topics? (Please check all that apply)

☐ Home energy efficiency ☐ Biofuels ☐ Anaerobic digestion

☐ Hydropower (small) ☐ Solar electric (PV) ☐ Solar hot water

☐ Wind (small) ☐ Farm energy efficiency ☐ Other: _____

Please place any additional comments on the back. Thank you!

- Can be used with all programs
- Excel spreadsheet for tabulation available online at www.e3a4u.info
 - Tools for Teachers – User Guide

E³A: Exploring Energy Efficiency & Alternatives

E3A State License Agreements* with MSU & WY:

- Minnesota
- Tennessee
- Florida
- New Mexico
- Missouri
- North Carolina

** right to modify & amend electronic files*

E3A Website

www.e3a4u.info

The screenshot shows the E3A website (Exploring Energy Efficiency & Alternatives) in a web browser. The browser's address bar shows the URL <http://e3a4u.info/>. The website has a navigation bar with links for HOME, ABOUT, and CONTACT. Below the navigation bar is a row of five colorful icons representing different energy topics: a house with solar panels, a wind turbine, a house with a solar panel, a house with a wind turbine, and a house with a solar panel. Below the icons is a row of links: FOR EDUCATORS | FOR FARM, RANCH & HOME | FOR YOUTH | UNDERSTANDING ENERGY | PODCAST | BLOG | ASK AN EXPERT. The main content area is divided into two columns. The left column is titled 'About This Project' and contains the text: 'E3A is your source for non-biased, research-based information on small renewable energy technologies.' Below this text is a link 'LEARN MORE >>' and three buttons: 'For Farm, Ranch & Home', 'For Educators', and 'Understanding Energy'. The right column is titled 'Choose an Energy Technology to explore:' and contains eight icons representing different energy technologies: a house with solar panels, a wind turbine, a house with a solar panel, a house with a wind turbine, a house with a solar panel, a wind turbine, a house with a solar panel, and a wind turbine. Below the icons is a row of links: FOR EDUCATORS | FOR FARM, RANCH & HOME | FOR YOUTH | UNDERSTANDING ENERGY | PODCAST | BLOG | ASK AN EXPERT. The bottom section of the website is divided into three columns. The left column is titled 'E3A Educators' Toolkit' and contains the text: 'The E3A toolkit includes lesson plans and resources to help make teaching energy easy - right out of the box!' Below this text is a link 'LEARN MORE ABOUT E3A FOR EDUCATORS >>' and a thumbnail image of the 'E3A Educators' Toolkit' book cover. The middle column is titled 'Featured Podcast' and contains the text: 'Solar Stock Water' and 'Milton Geiger, University of Wyoming Extension Energy Coordinator, shares ...'. Below this text is a link 'MORE ABOUT THIS EPISODE >>' and a list of 'More Episodes' including 'Storm Windows', '10 Steps to Energy Efficient Living', and 'Energy Efficient Lighting'. The right column is titled 'Featured Article' and contains the text: 'Vampires, Phantoms, and Wall Warts' and 'Home Pest Control: Vampires, Phantoms and Wall Warts Pests, which by definition ...'. Below this text is a link 'READ THIS ARTICLE >>' and a list of 'More Articles' including 'Solar Gardens - Part I', 'Air Source Heat Pumps', 'Opportunities for Hydropower', and 'Projects on US BoD Facilities'. At the bottom of the browser window, there is a taskbar with icons for various applications and a system tray showing the time as 9:18 AM on 2/27/2014.

E³A: Exploring Energy Efficiency & Alternatives HOME | ABOUT | CONTACT

FOR EDUCATORS | FOR FARM, RANCH & HOME | FOR YOUTH | UNDERSTANDING ENERGY | PODCAST | BLOG | ASK AN EXPERT

About This Project

E3A is your source for non-biased, research-based information on small renewable energy technologies.

[LEARN MORE >>](#)

- For Farm, Ranch & Home
- For Educators
- Understanding Energy

Choose an Energy Technology to explore:

-
-
-
-
-
-
-
-

E3A Educators' Toolkit

The E3A toolkit includes lesson plans and resources to help make teaching energy easy - right out of the box!

[LEARN MORE ABOUT E3A FOR EDUCATORS >>](#)

Featured Podcast

Solar Stock Water

Milton Geiger, University of Wyoming Extension Energy Coordinator, shares ...

[MORE ABOUT THIS EPISODE >>](#)

More Episodes

- Storm Windows
- 10 Steps to Energy Efficient Living
- Energy Efficient Lighting

Featured Article

Vampires, Phantoms, and Wall Warts

Home Pest Control: Vampires, Phantoms and Wall Warts Pests, which by definition ...

[READ THIS ARTICLE >>](#)

More Articles

- Solar Gardens - Part I
- Air Source Heat Pumps
- Opportunities for Hydropower
- Projects on US BoD Facilities

Speed up browsing by disabling add-ons. [Choose add-ons](#) [Ask me later](#)

E³A: Exploring Energy Efficiency & Alternatives

ordering a toolkit –
\$98.00 via. E3A website ...
... MSU online store

E³A: Exploring Energy Efficiency & Alternatives Access to Teaching Materials

**Contact Torie Haraldson ...
for a User Name and Password**

E³A Part II: What's New...



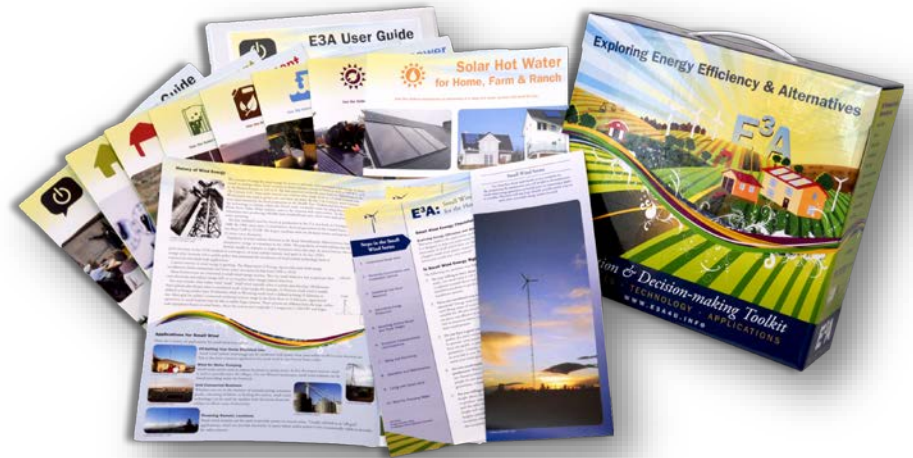
Professional Development Program (PDP)

With funding comes...deliverables

- By August 2015...
 - New folders
 - Media resources
 - Support
 - Website enhancements
 - Webinars
 - Trainings

New Folders

- Direct use geothermal
- Ground-source heat pumps
- Irrigation efficiency
- Solar for Youth
- Solar-powered livestock watering
- Wood Heat



Coming by Fall 2014...many
will be sooner!

New Folders



Support: Skype[®]-an-Expert

- Protocol and equipment for having a specialist “attend” programming from afar
 - Provide expertise, especially in Q&A or other technical questions...or just sit there quietly!



Media Resources

- Videos to support existing folders
 - Fall 2014
- Website redesign
 - Simplify:
www.e3a4u.info will be designed for educators, not the public
 - Underway!



Webinars: Two per month

Technical Shorts Webinars

- second Tuesday of every month – 1:00-1:30 Mountain Time

- March 11 – Changes to Federal Small Hydropower Regulation
- April 8 - USDA Incentives for Energy Efficiency & Renewable Energy
- May 13 - Variable Frequency Drives (VFDs)
- June 10 – TBD

Program Resource Sharing Webinars

- 4th Friday of every month – 1:00-2:00 Mountain Time

- March 28 – Feature of State Extension Energy Programs
- April 25 - Agricultural Energy Audits
- May 23 - Overview of new E3A Curriculum
- June 27 - Agency Partnership Opportunities

Trainings

- Resources available for in-state trainings

—Alaska in April
2014

- More to follow if WSARE states want them
- UW & MSU will come to you...



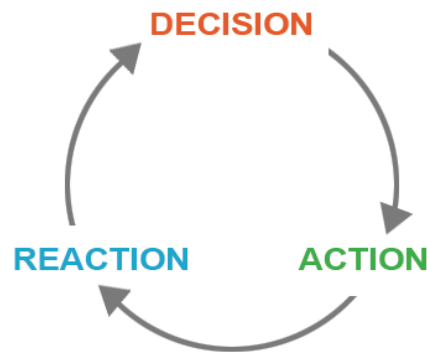
Collaboration

- Reach out to NESARE project on Farm Energy
- Create effective platform for other states using E3A to share improvements
- www.eXtension.org
 - Integrate information into the Farm Energy CoP



Feedback

- Need to know what works and what doesn't for field educators, Conservation Districts, and others!
 - We'll work to make improvements to allow you to better your clients.



Contact Information

- Contact
- Milton Geiger
 - mgeiger1@uwyo.edu
 - (307) 766-3002

www.e3a4u.info

