OUTCOME
EVALUATION
step-by-step
March 22, 2017

EvaluATE
Evaluation Support Center
For the National Science Foundation's
Advanced Technological Education (ATE) Program

EvaluATE Advancing excellence through evaluation

Webinars

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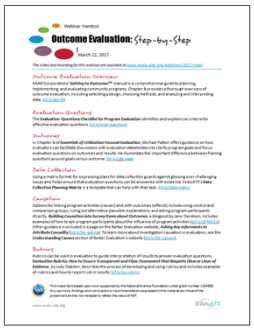

Webinar Handout
Outcome Evaluation: Step-by-Step
March 22, 2017
Handout

Recording

www.evalu-ate.org/webinars

Introductions

Miranda Lee

Lori Wingate

EvaluATE

THE EC EVALUATION CENTER

WESTERN MICHIGAN UNIVERSITY

Behind the Scenes

Cheryl Endres

Emma Perk

Mike Lesiecki

Janet Pinhorn

Tim Suchomski

EvaluATE

NETWORKS

WESTERN MICHIGAN UNIVERSITY

THE EC EVALUATION CENTER

MARICOPA COMMUNITY COLLEGES®

This material is based upon work supported by the National Science Foundation under grant number 1600992.

Any opinions, findings, and conclusions or recommendations expressed in this material are those of the presenters and do not necessarily reflect the views of NSF.

Overview

Identifying Intended Outcomes and Evaluation Questions

Question Break

Planning for Data Collection and Beyond

Question Break

Interpreting Results

Question Break

Identifying Intended Outcomes and Evaluation Questions

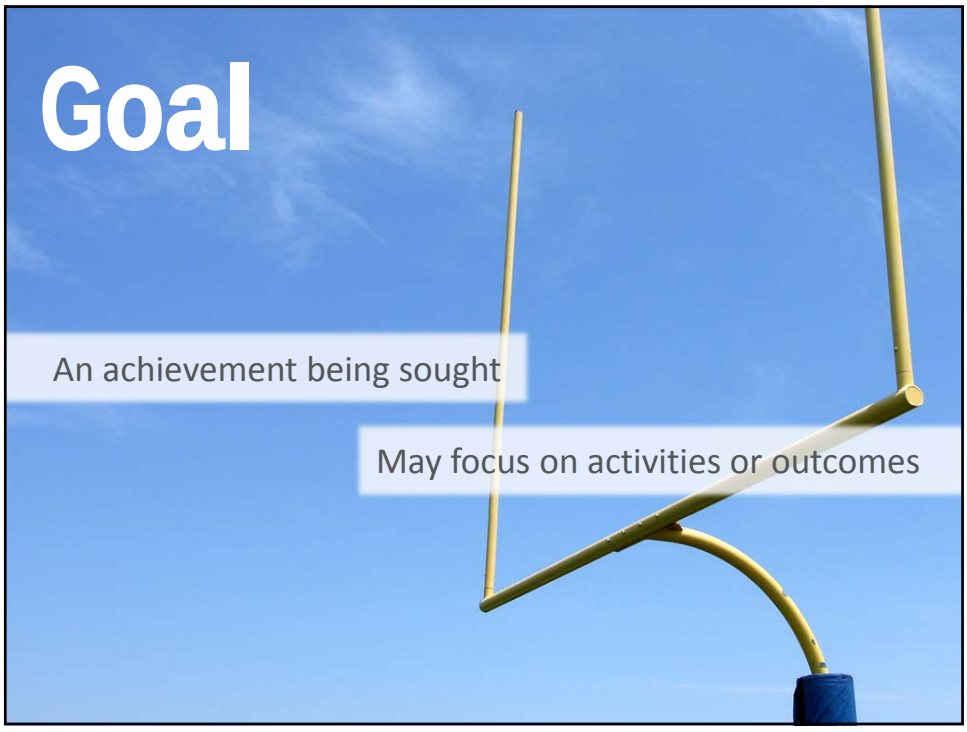
Outcome Evaluation Steps

1. Define intended outcomes
2. Identify evaluation questions
3. Plan for data collection and beyond
4. Collect and analyze data
5. Interpret results (answer evaluation questions)

Webinar Sections

1. Define intended outcomes
   Identify evaluation questions
2. Plan for data collection and beyond
   Collect and analyze data
3. Interpret results (answer evaluation questions)

Activity
What a project does, the actions it takes


Goal
An achievement being sought
May focus on activities or outcomes

Activity goal
(what a project will do)
EvaluATE will deliver 4 webinars per year, serving 1,000 people
Outcome goal
(what difference it will make)
Webinar participants will improve their evaluation knowledge and practices

Real goal statements from real ATE projects

> The goal of the project is to increase the supply of qualified cybersecurity professionals for industry and government.

Excerpt of actual ATE project abstract from www.nsf.gov/ate

> The goal of the project is to **increase the supply** of qualified cybersecurity professionals for industry and government.

Outcome: More qualified workforce

> The goal of this project is to develop an associate's degree in mechatronics, incorporating pathways from local high schools into the degree offering at three partner colleges.

Excerpt of actual ATE project abstract from www.nsf.gov/ate

> The goal of this project is to **develop an associate's degree** in mechatronics, incorporating pathways from local high schools into the degree offering at three partner colleges.

Activity: Create degree program

> This project has the overarching goal of increasing awareness of opportunities in science, technology, engineering, and mathematics (STEM) disciplines for women and underrepresented minorities.

Excerpt of actual ATE project abstract from www.nsf.gov/ate

> This project has the overarching goal of **increasing awareness** of opportunities in science, technology, engineering, and mathematics (STEM) disciplines for women and underrepresented minorities.

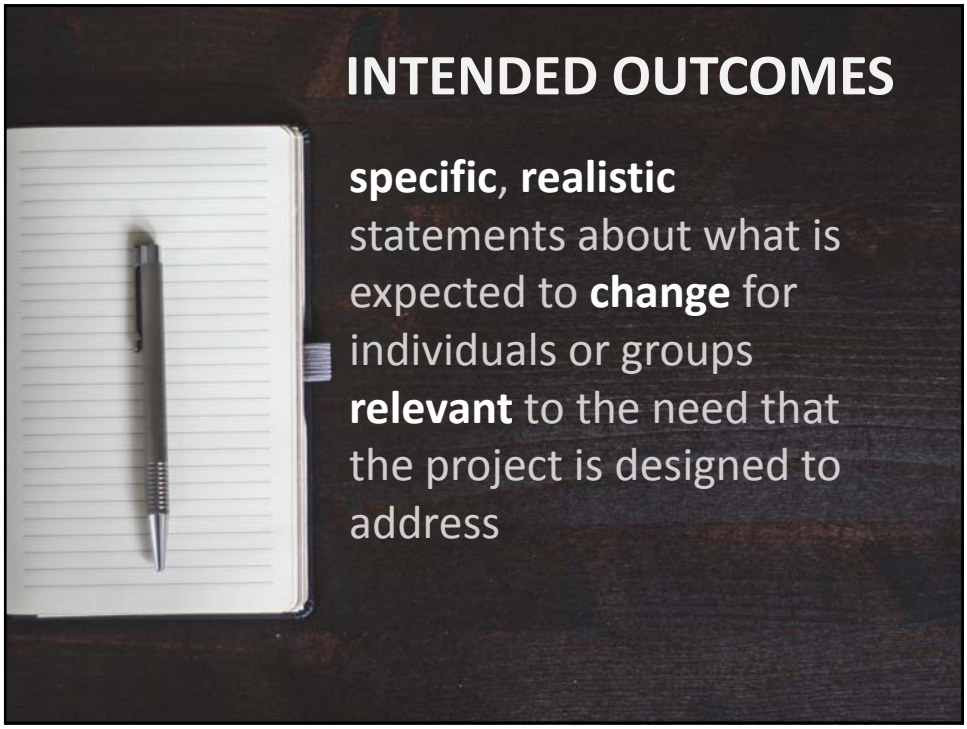
Outcome: Change what people know about STEM disciplines

> The project's goal is to build a sustainable program to enhance process technology education by introducing new hands-on opportunities through use of light-weight extremely low-cost miniature industrial equipment with a small footprint that fits on a standard desktop or which can be taken home for use in homework assignments.

Excerpt of actual ATE project abstract from www.nsf.gov/ate

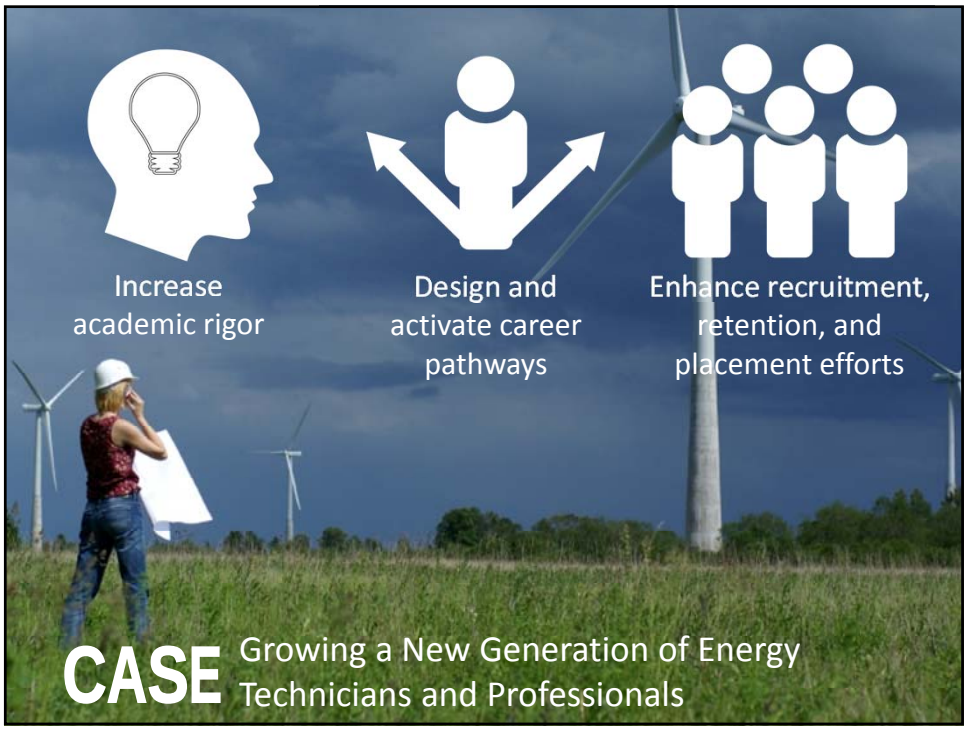
> The project's goal is to **build** a sustainable program to enhance process technology education by **introducing** new hands-on opportunities through use of light-weight extremely low-cost miniature industrial equipment with a small footprint that fits on a standard desktop or which can be taken home for use in homework assignments.

Activity: Create program, use new equipment


INTENDED OUTCOMES
specific, realistic statements about what is expected to change for individuals or groups relevant to the need that the project is designed to address

Current wind energy workforce:
CASE
Growing a New Generation of Energy Technicians and Professionals

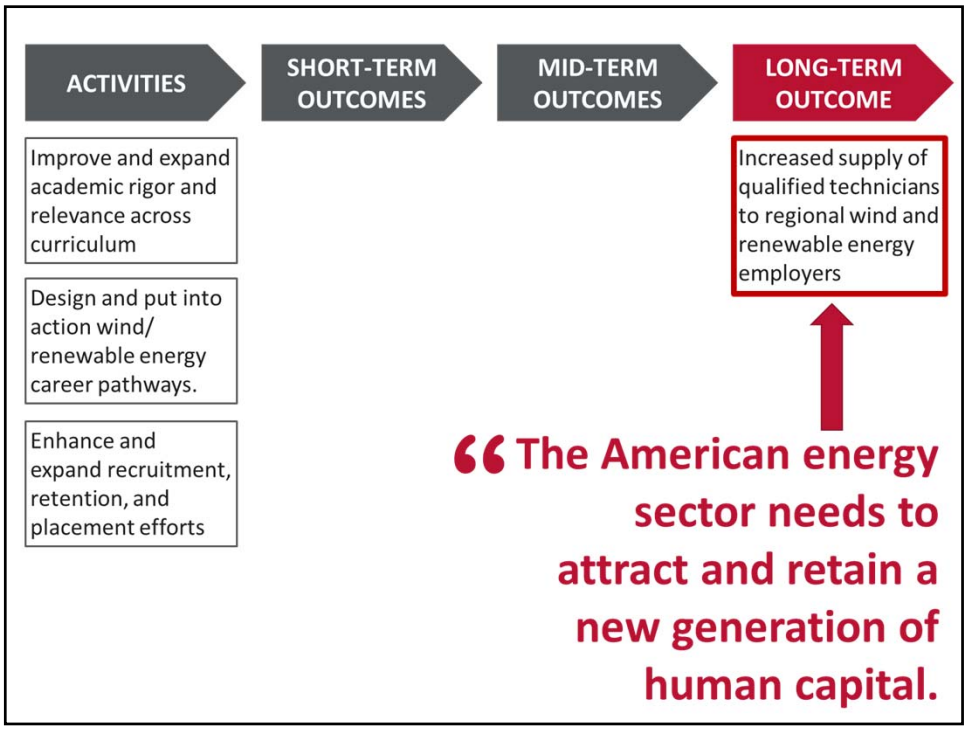
Projected retirement within 10 years:
CASE
Growing a New Generation of Energy Technicians and Professionals

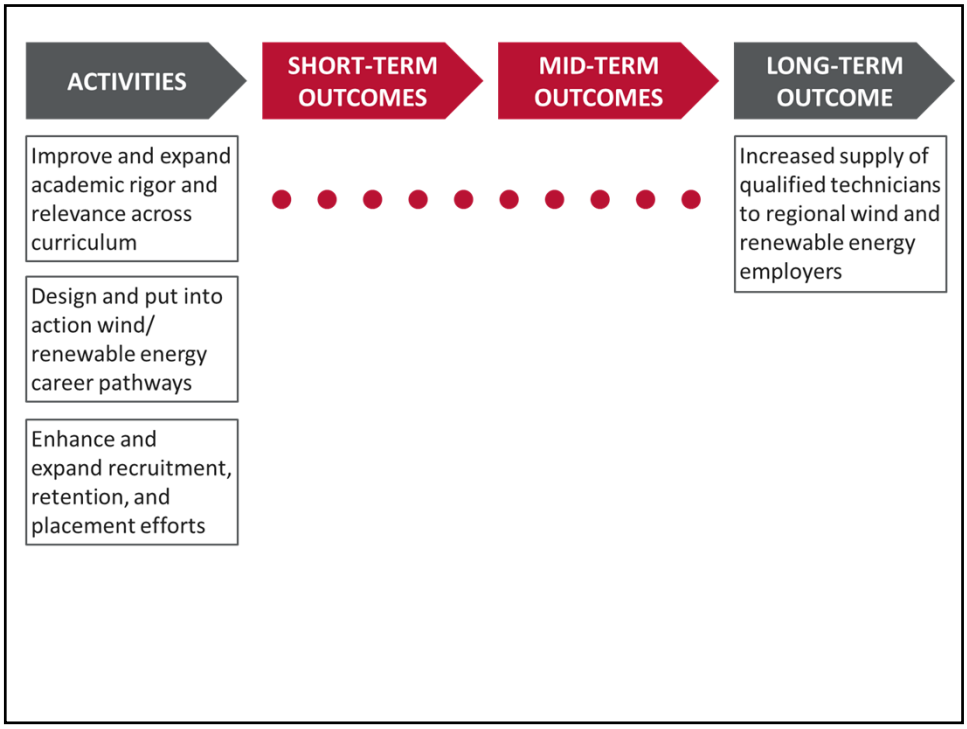

Increase academic rigor
Design and activate career pathways
Enhance recruitment, retention, and placement efforts
CASE
Growing a New Generation of Energy Technicians and Professionals

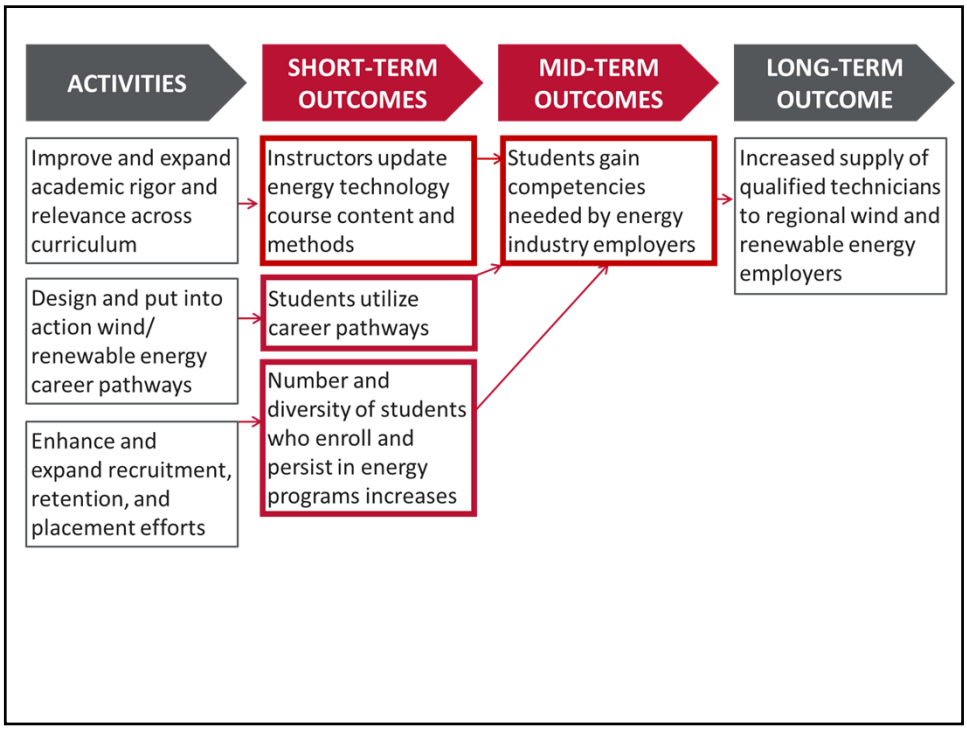
Project Goals

1. **Improve** and **expand** academic rigor and relevance across core technology curriculum and wind energy technology specific curriculum.
2. **Design and put into action** wind/renewable energy career pathways.
3. **Enhance and expand** recruitment, retention, and placement efforts across technology programs.

Project actions = Activities




ACTIVITIES
SHORT-TERM OUTCOMES
MID-TERM OUTCOMES
LONG-TERM OUTCOME
Improve and expand academic rigor and relevance across curriculum
Design and put into action wind/ renewable energy career pathways
Enhance and expand recruitment, retention, and placement efforts
Increased supply of qualified technicians to regional wind and renewable energy employers


ACTIVITIES
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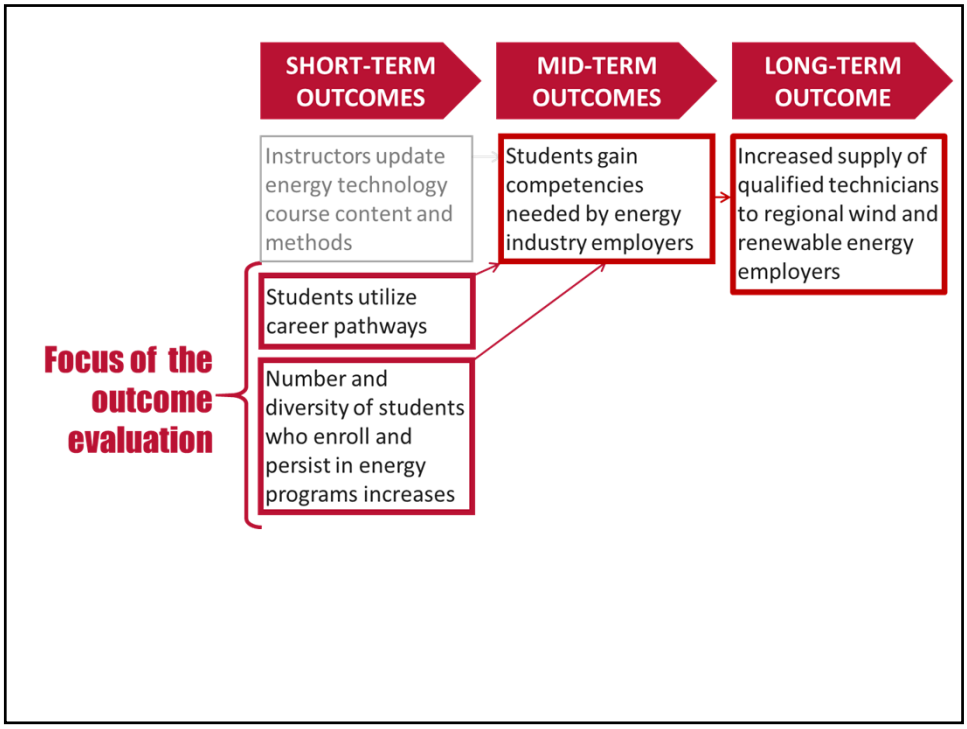
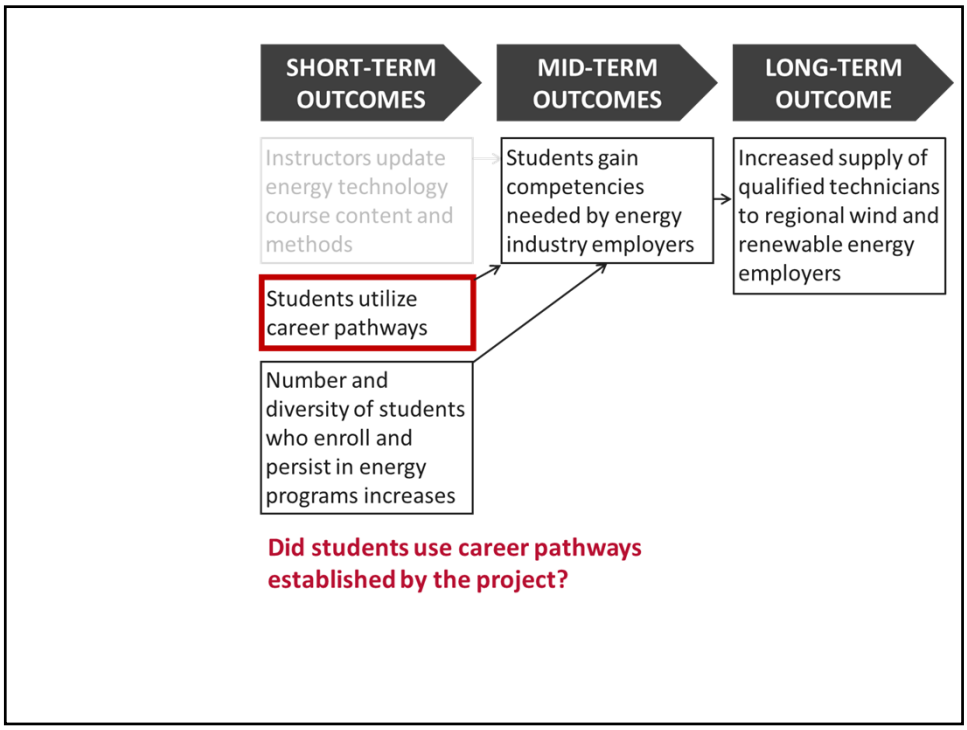
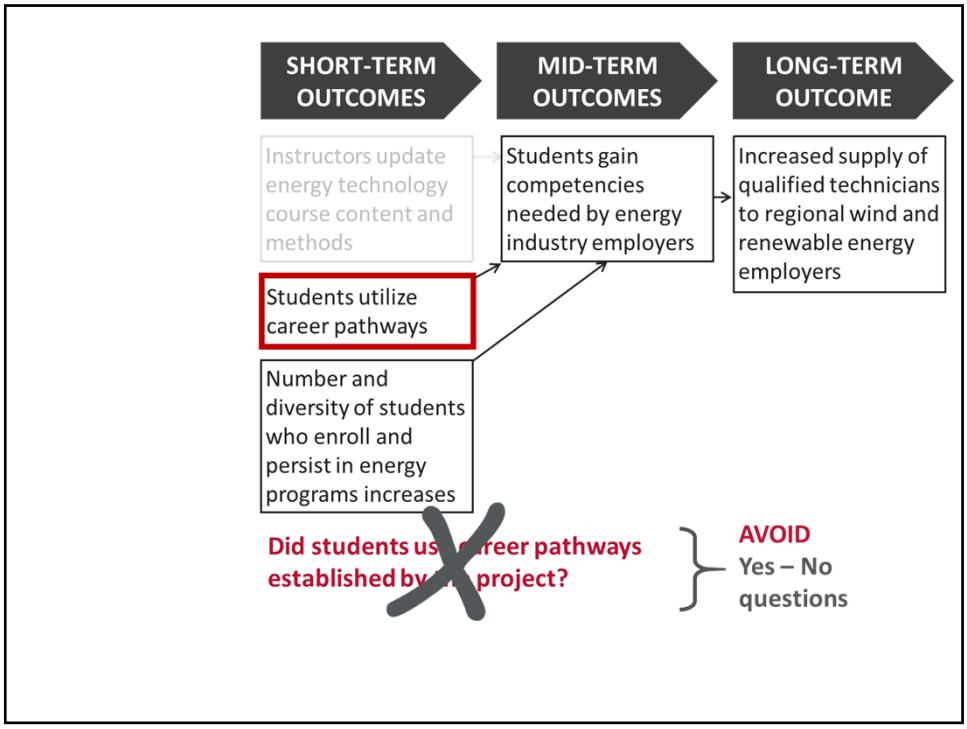
Enhance and expand recruitment, retention, and placement efforts
Instructors update energy technology course content and methods
Students utilize career pathways
Number and diversity of students who enroll and persist in energy programs increases
Students gain competencies needed by energy industry employers
Increased supply of qualified technicians to regional wind and renewable energy employers


SHORT-TERM OUTCOMES
MID-TERM OUTCOMES
LONG-TERM OUTCOME
Instructors update energy technology course content and methods
Students gain competencies needed by energy industry employers
Increased supply of qualified technicians to regional wind and renewable energy employers
Students utilize career pathways
Number and diversity of students who enroll and persist in energy programs increases
Focus of the outcome evaluation


SHORT-TERM OUTCOMES
MID-TERM OUTCOMES
LONG-TERM OUTCOME
Instructors update energy technology course content and methods
Students gain competencies needed by energy industry employers
Increased supply of qualified technicians to regional wind and renewable energy employers
Students utilize career pathways
Number and diversity of students who enroll and persist in energy programs increases
Did students use career pathways established by the project?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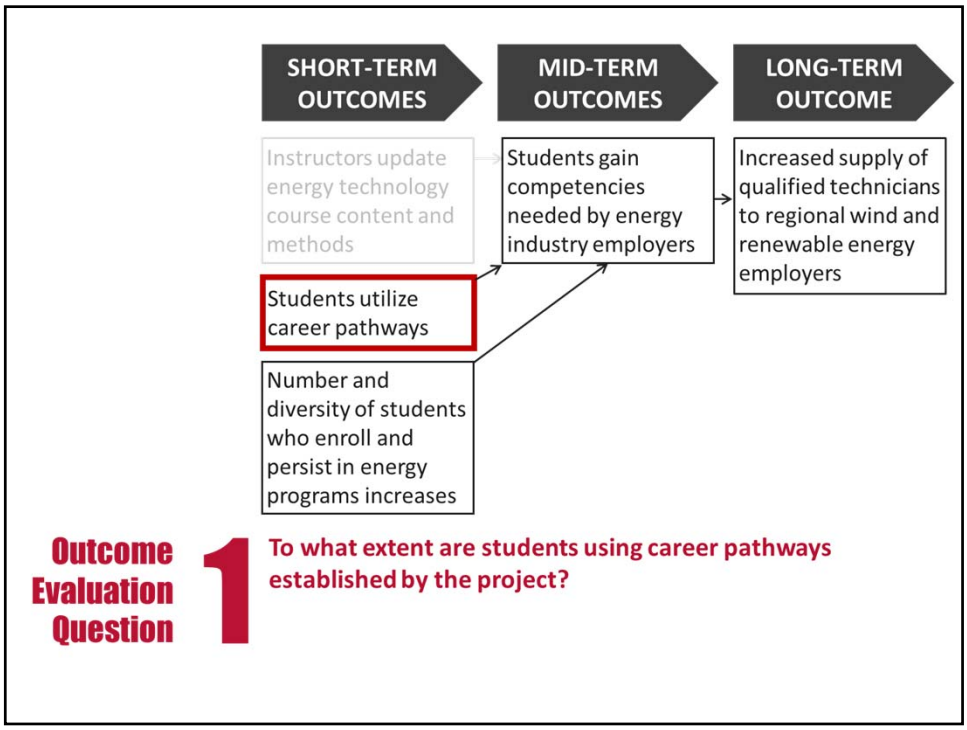
Students utilize career pathways
Number and diversity of students who enroll and persist in energy programs increases
Did students us reer pathways established by project?
AVOID
Yes – No questions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Students utilize career pathways
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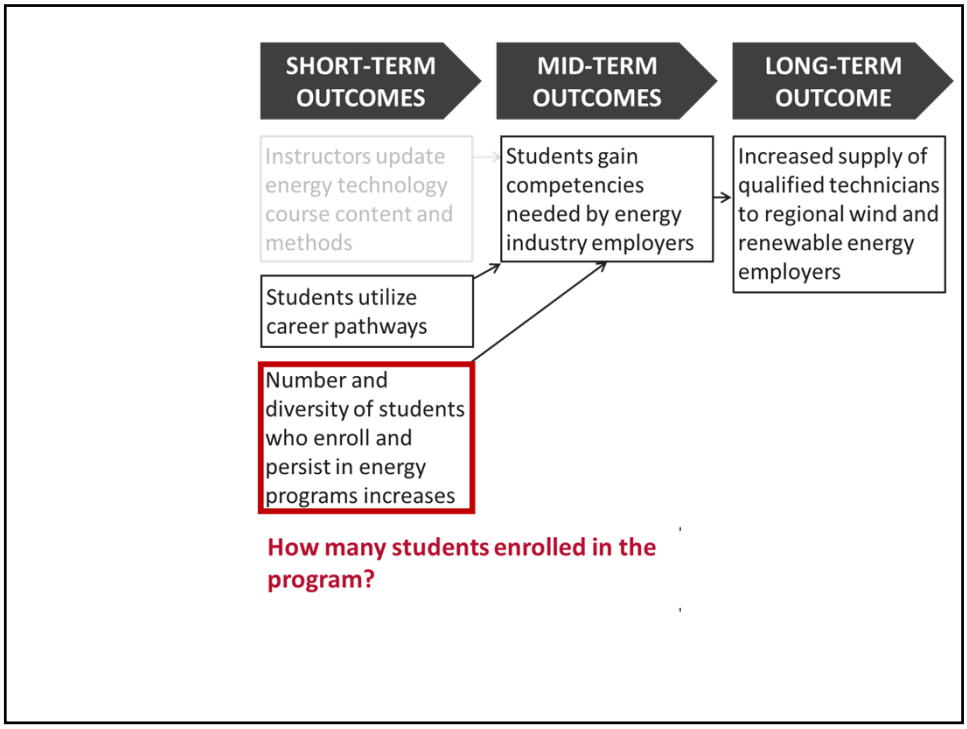
Outcome Evaluation Question 1
To what extent are students using career pathways established by the project?


SHORT-TERM OUTCOMES
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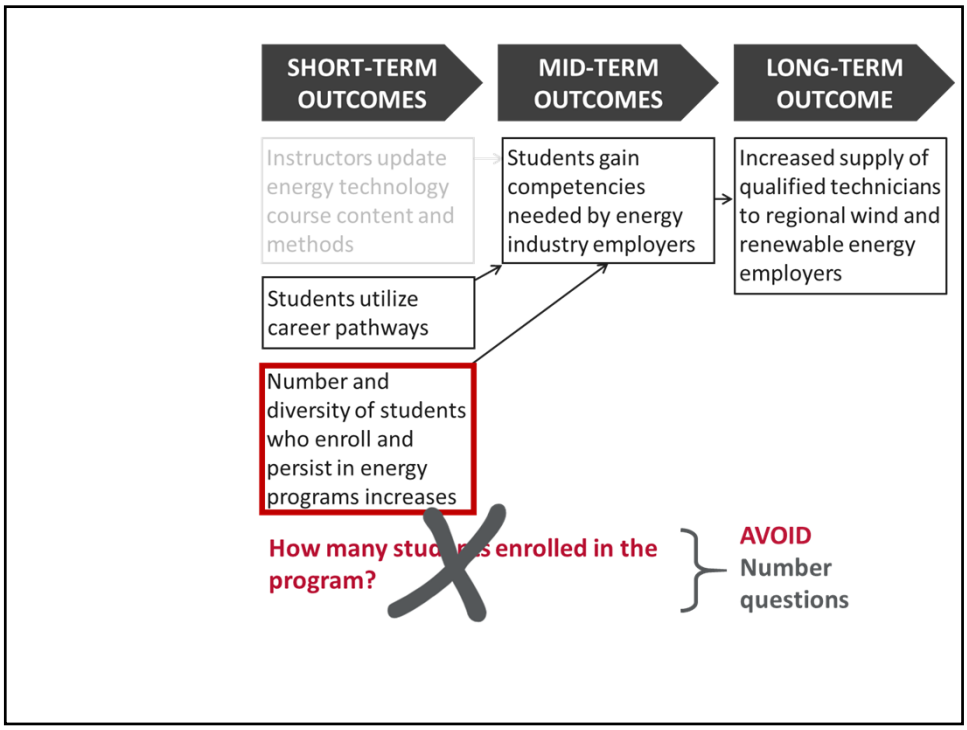
Increased supply of qualified technicians to regional wind and renewable energy employers
Students utilize career pathways
Number and diversity of students who enroll and persist in energy programs increases
How many students enrolled in the program?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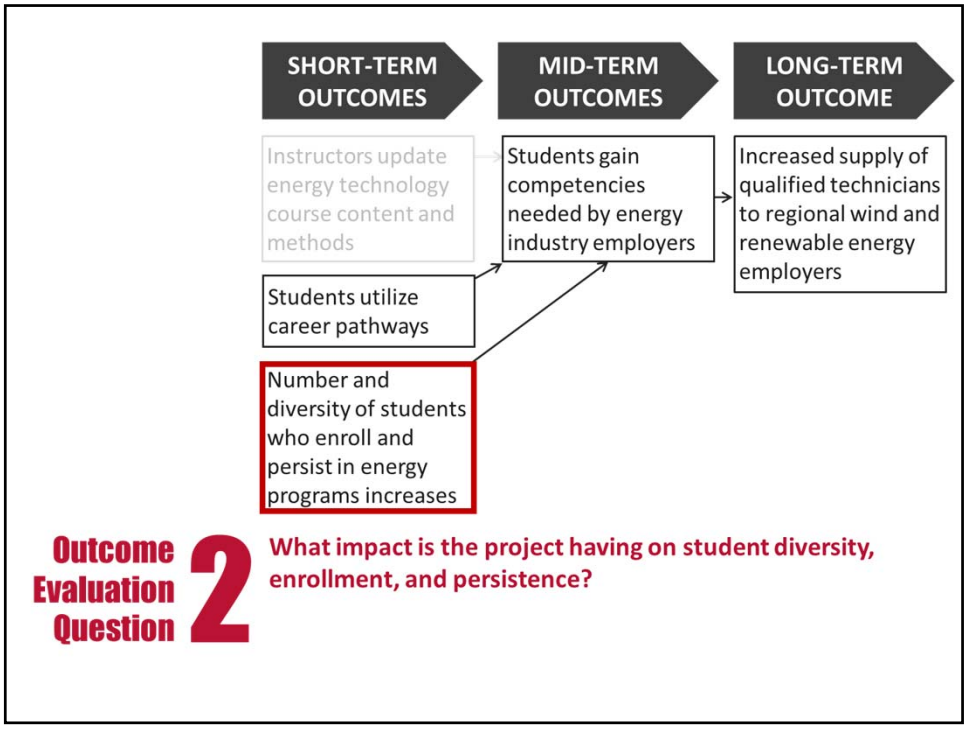
Students utilize career pathways
Number and diversity of students who enroll and persist in energy programs increases
How many students enrolled in the program?
AVOID Number questions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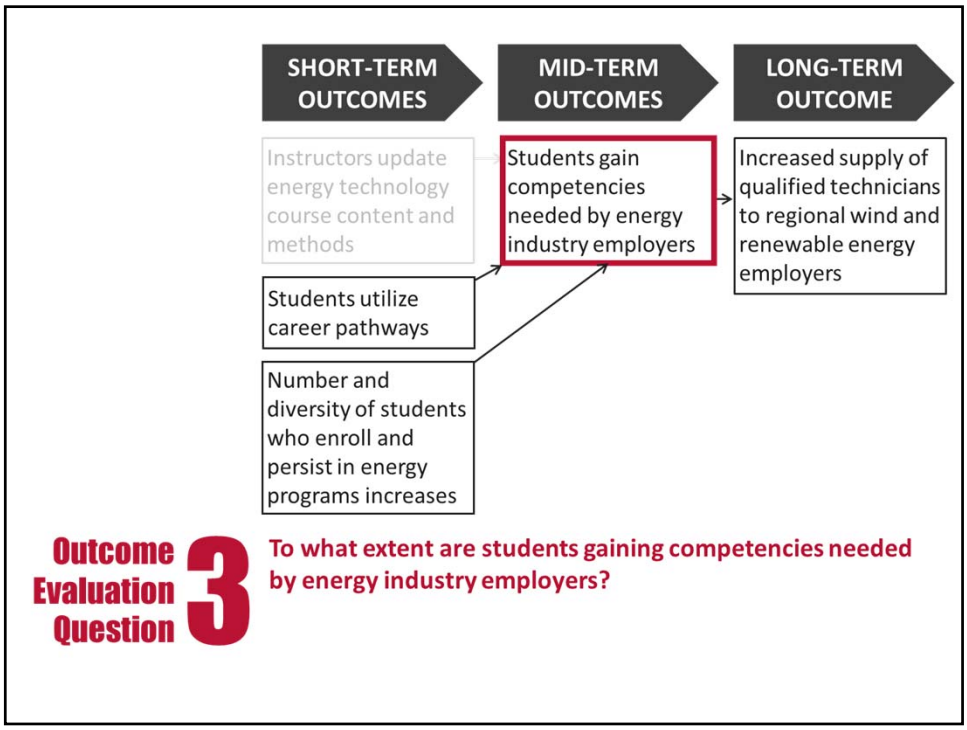
Students utilize career pathways
Number and diversity of students who enroll and persist in energy programs increases
Outcome Evaluation Question 2
What impact is the project having on student diversity, enrollment, and persistence?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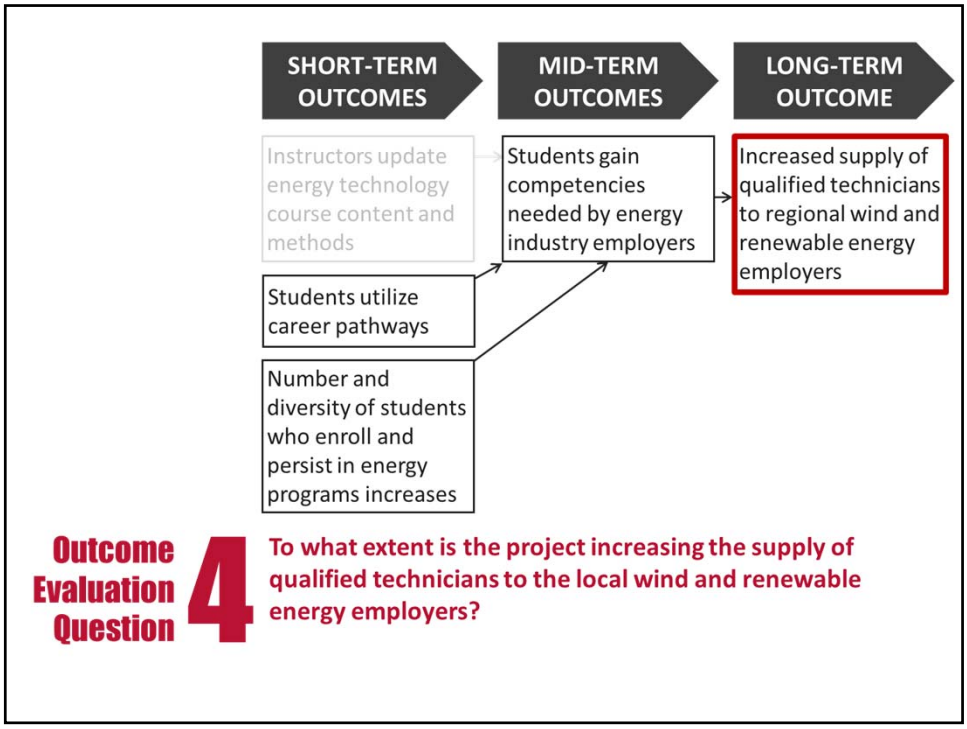
Outcome Evaluation Question 3
To what extent are students gaining competencies needed by energy industry employers?



Summary

- ✓ Clearly define intended outcomes.
- ✓ Identify multiple levels of outcomes.
- ✓ Frame evaluation questions around outcomes.
- ✓ Ask evaluation questions that allow for a range of conclusions.
- ✓ **Bonus** - Always include an evaluation question like this:

  "What are the project's unintended positive or negative side effects or outcomes, if any?"

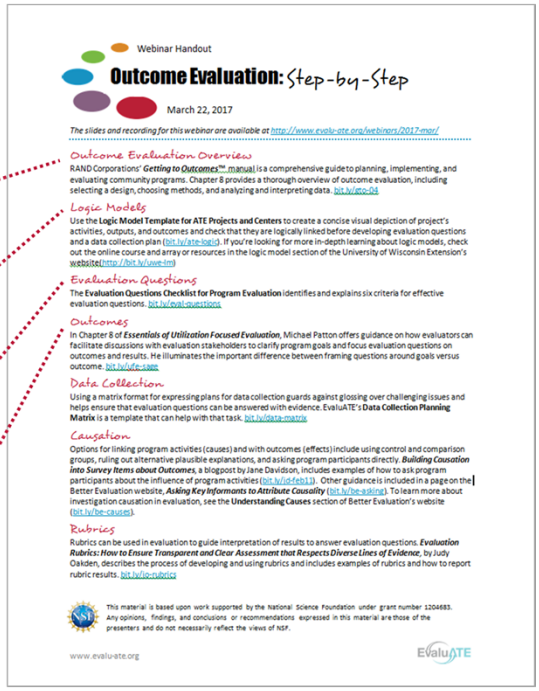
Resources

Getting to Outcomes™

Logic model template, online course, and more

Evaluation Questions Checklist

Michael Patton on defining outcomes



Webinar Handout

Outcome Evaluation: Step-by-Step

March 22, 2017

The slides and recording for this webinar are available at http://www.evalu-ate.org/webinars/2017-mar/

Outcome Evaluation Overview

RAND Corporations' ***Getting to Outcomes™*** manual is a comprehensive guide to planning, implementing, and evaluating community programs. Chapter 8 provides a thorough overview of outcome evaluation, including selecting a design, choosing methods, and analyzing and interpreting data. bit.ly/gto-08

Logic Models

Use the **Logic Model Template for ATE Projects and Centers** to create a concise visual depiction of project's activities, outputs, and outcomes and check that they are logically linked before developing evaluation questions and a data collection plan (bit.ly/ate-logic). If you're looking for more in-depth learning about logic models, check out the online course and array or resources in the logic model section of the University of Wisconsin Extension's website(http://bit.ly/uwe-lm)

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The **Evaluation Questions Checklist for Program Evaluation** identifies and explains six criteria for effective evaluation questions. bit.ly/eval-questions

Outcomes

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Data Collection

Using a matrix format for expressing plans for data collection guards against glossing over challenging issues and helps ensure that evaluation questions can be answered with evidence. EvaluATE's **Data Collection Planning Matrix** is a template that can help with that task. bit.ly/data-matrix

Causation

Options for linking program activities (causes) and with outcomes (effects) include using control and comparison groups, ruling out alternative plausible explanations, and asking program participants directly. ***Building Causation into Survey Items about Outcomes***, a blogpost by Jane Davidson, includes examples of how to ask program participants about the influence of program activities (bit.ly/jd-feb13). Other guidance is included in a page on the Better Evaluation website, ***Asking Key Informants to Attribute Causality*** (bit.ly/be-asking). To learn more about investigation causation in evaluation, see the **Understanding Causes** section of Better Evaluation's website (bit.ly/be-causes).

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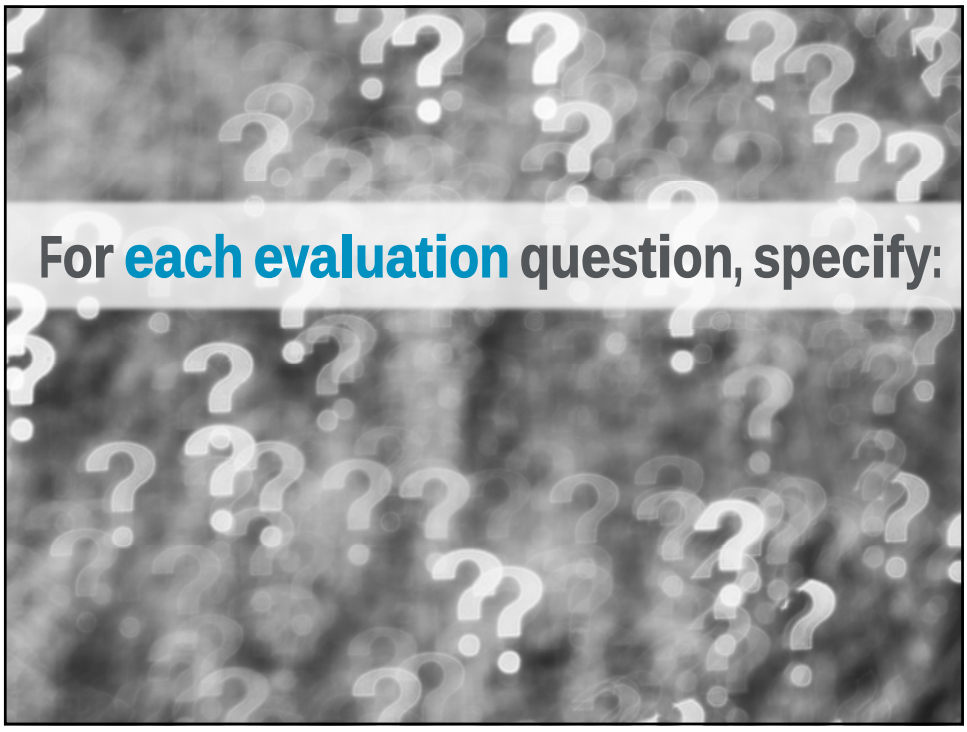
EvaluATE

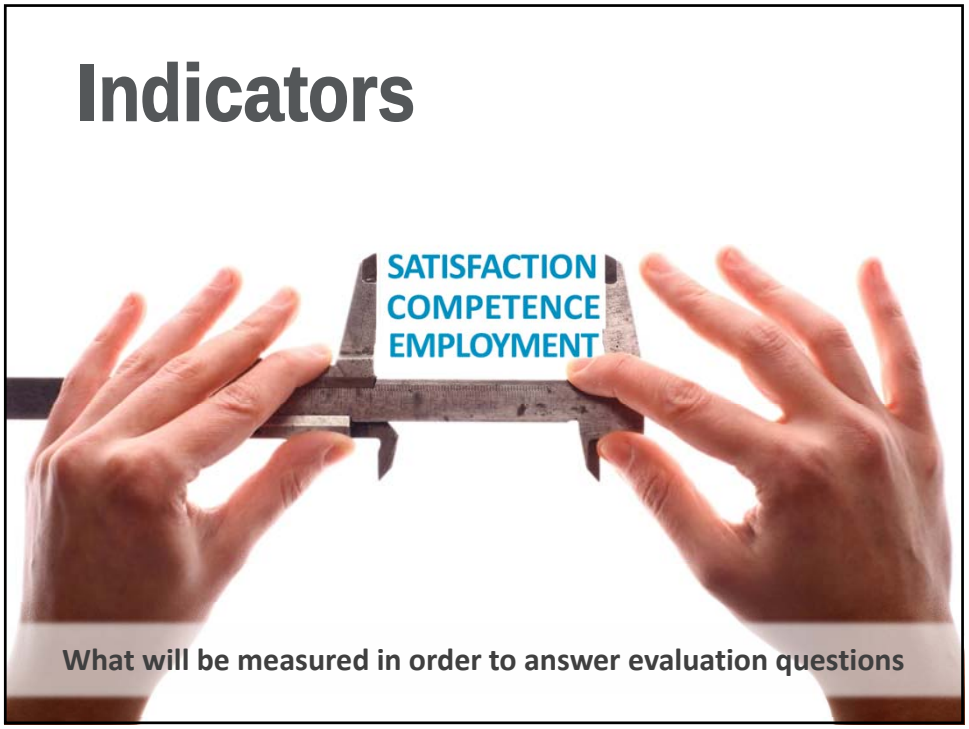
Questions?

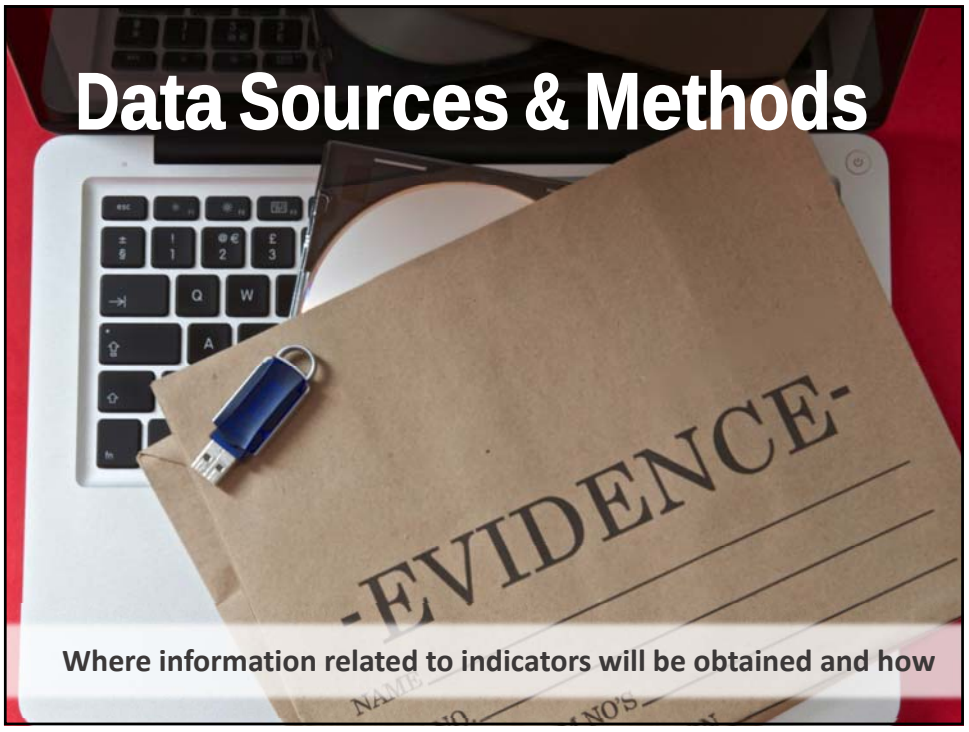
Lori

Miranda

2
Planning for Data Collection
and Beyond


For each evaluation question, specify:


Indicators
SATISFACTION
COMPETENCE
EMPLOYMENT
What will be measured in order to answer evaluation questions


Data Sources & Methods
-EVIDENCE-
Where information related to indicators will be obtained and how

People
Who will be responsible for which aspects of data collection

Timing
When data will be collected and with what frequency

Analysis
How collected data will be transformed into usable information

Interpretation
How evaluation findings will be translated into conclusions

For each evaluation question, specify:

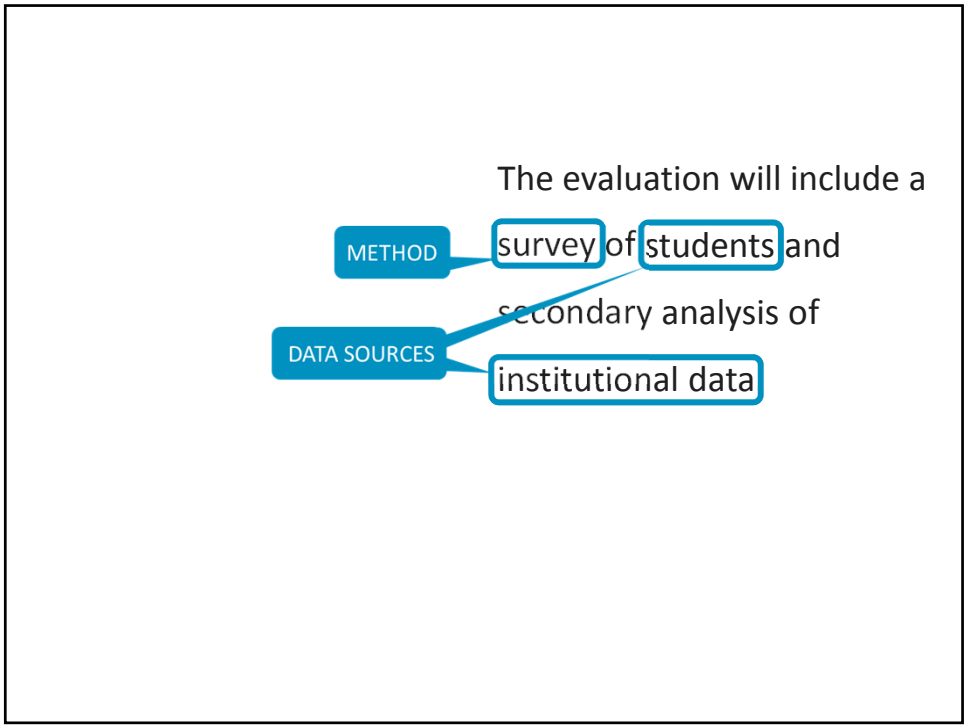
- ✓ Indicators
- ✓ Data sources and methods
- ✓ People
- ✓ Timing
- ✓ Analysis
- ✓ Interpretation

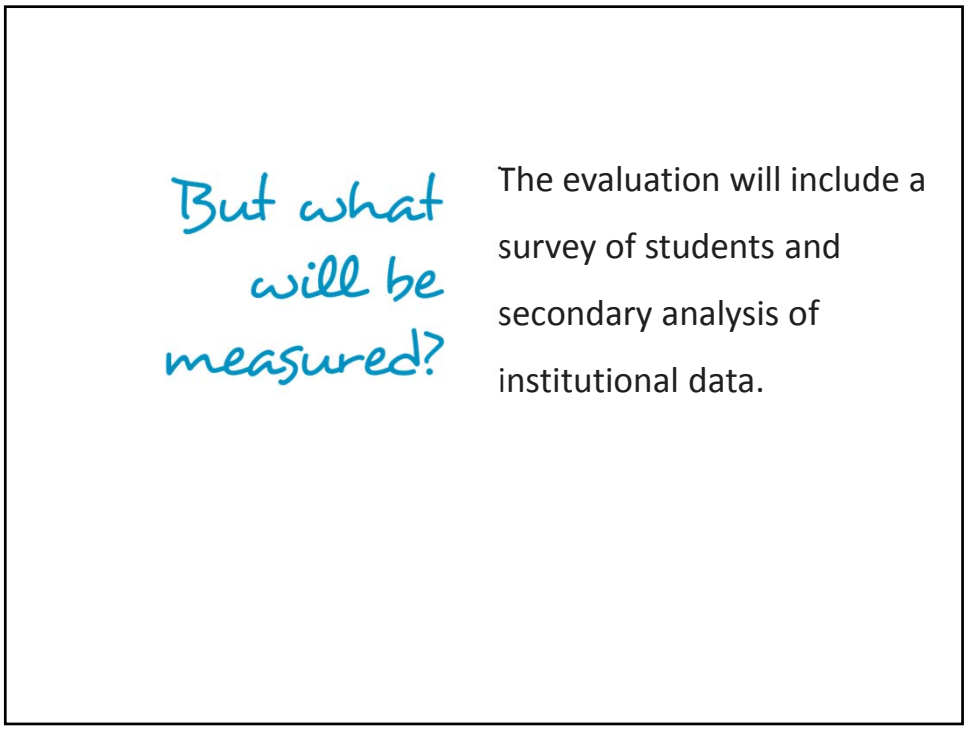
Outcome Evaluation Question 1:
To what extent are students using career pathways established by the project?

INDICATOR	DATA SOURCE & METHOD	PEOPLE	TIMING	ANALYSIS	INTERPRETATION
Number of high school students who are dual enrolled	Institutional data	Project director obtains from institutional research office	End of each semester	No analysis – use raw numbers	Comparison against performance target using rubric
Number and percentage of dual-enrolled students who intend to pursue degree and certificate programs	Survey of dual-enrolled students	External evaluator develops survey and conducts analyses; faculty administer survey	End of each semester	Descriptive statistics, disaggregated by demographic characteristics; inductive coding of qualitative data	Comparison against performance target using rubric

WHAT will be measured

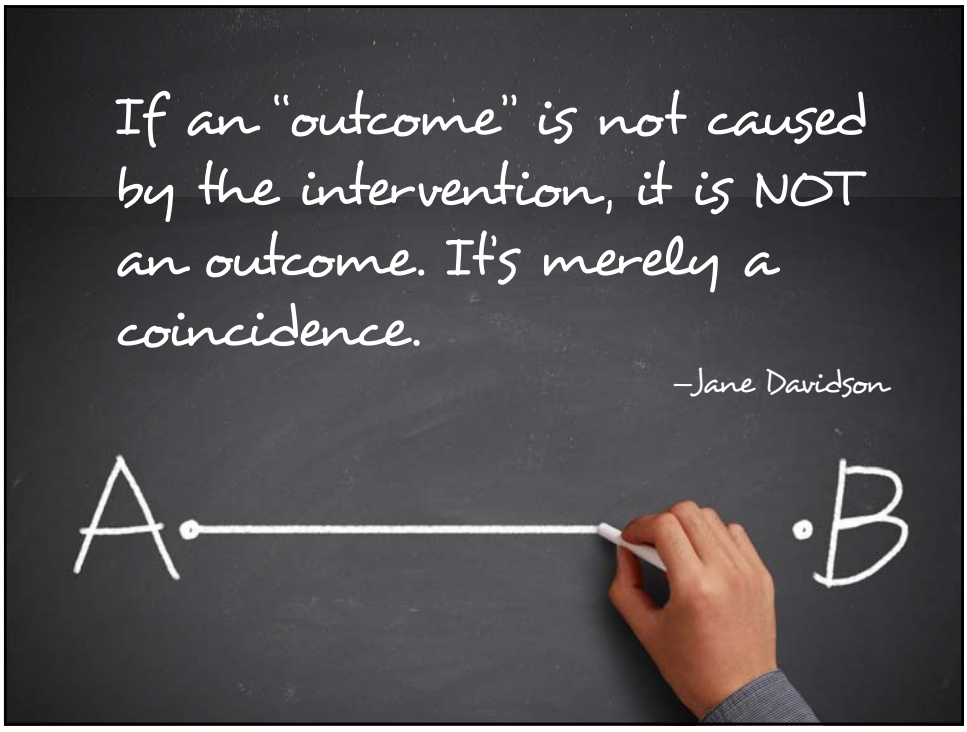
HOW information will be obtained


The evaluation will include a survey of students and secondary analysis of institutional data
METHOD
DATA SOURCES


But what will be measured?
The evaluation will include a survey of students and secondary analysis of institutional data.

INDICATOR	DATA SOURCE & METHOD
Number of high school students in dual enrollment courses	Institutional data
Number and percentage of dual-enrolled students who intend to pursue degree and certificate programs	Survey of dual-enrolled students

The evaluation will include a survey of students and secondary analysis of institutional data.



Outcome

change resulting from project activities

effect — cause or contributor

Linking cause and effect

- ✓ Use control or comparison groups
- ✓ Scan environment for other influences
- ✓ Ask participants directly

How likely are you to seek a job in the renewable energy field?

- O Not at all likely
- O Somewhat likely
- O Very likely
- O Extremely likely

Links cause and effect

How much impact has this course had on the likelihood that you will seek a job in the renewable energy field?

- O Negative impact
- O No impact
- O Slight positive impact
- O Moderate positive impact
- O Major positive impact

Asks about both magnitude and direction of effect

Summary

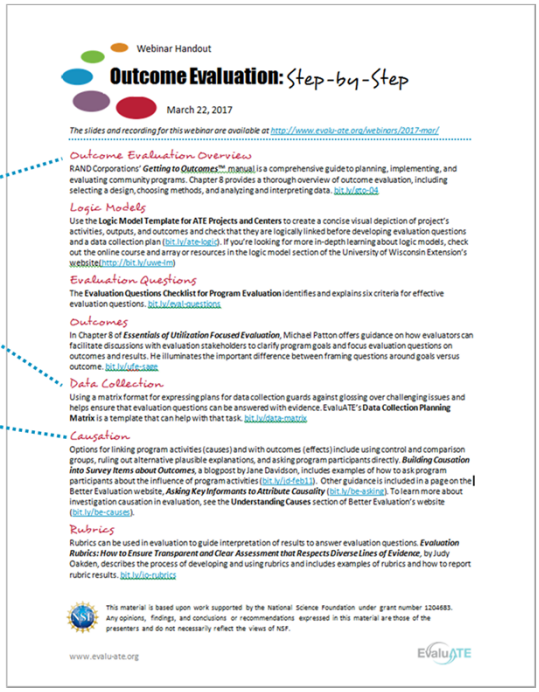
- ✓ Align data collection to **evaluation questions**.
- ✓ Develop concrete plans for analysis and interpretation.
- ✓ Build cause-and-effect into data collection when possible.

Resources

Getting to Outcomes ™

Data collection plan matrix template

Variety of resources on causation



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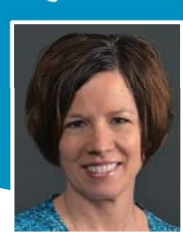
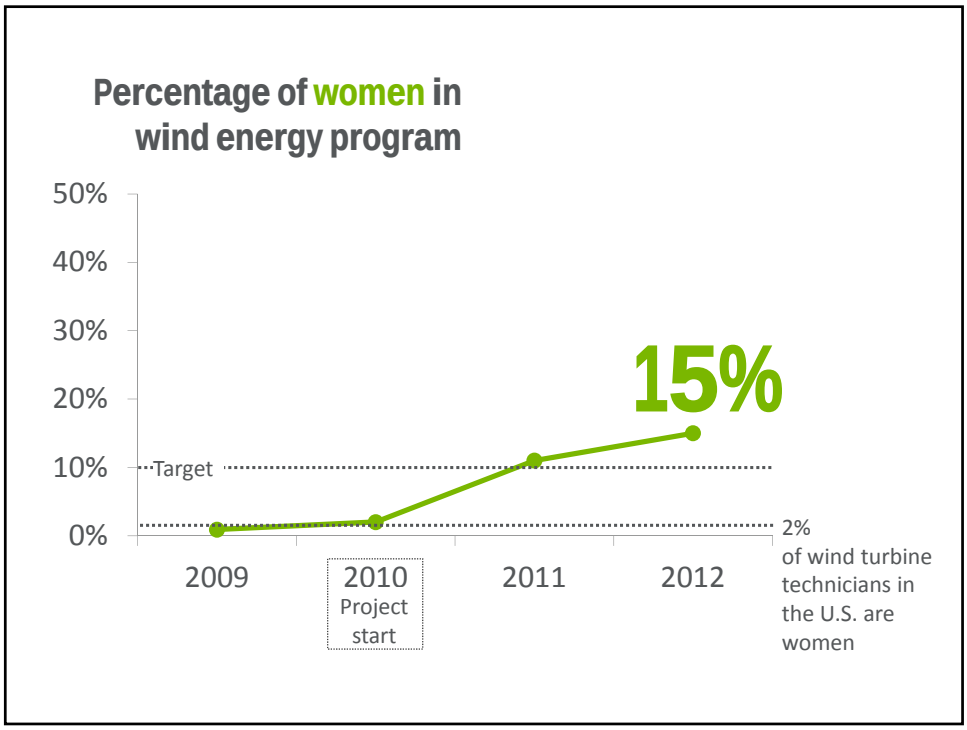
Questions?



Lori

Miranda

Interpreting Results


Percentage of women in wind energy program
50%
40%
30%
20%
10%
0%
Target
15%
2009
2010
Project start
2011
2012
2%
of wind turbine technicians in the U.S. are women

Interpretation requires comparison

Comparison or Control Groups

Performance Targets

National Data

Historical Data

Standards

Stakeholder Expectations

Outcome Evaluation Question 2:

What impact is the project having on student **diversity**, enrollment, and persistence?

Indicator	Target
Percentage of women completing program	10%
Number of veterans enrolled	5-10
Percentage of underrepresented minority students completing program	10%

Performance **targets** from project proposal

Met or not met (Yes/No)

Indicator	Original Target
Percentage of women completing program	10%
Number of veterans enrolled	5-10
Percentage of underrepresented minority students completing program	10%

Met or not met (Yes/No) | Continuum

Indicator	Original Target	Below Target	On Target	Above Target
Percentage of women completing program	10%	Less than 8%	8-12%	More than 13%
Number of veterans enrolled	5-10	Fewer than 5	5-10	More than 10
Percentage of underrepresented minority students completing program	10%	Less than 8%	8-12%	More than 13%

Alternative Rubric

Indicator	Low Impact	Minimal Impact	Moderate Impact	High Impact
Percentage of women completing program	2% or less	3-5%	6-12%	More than 13%
Number of veterans enrolled	2 or fewer	3-5	5-10	More than 10
Percentage of underrepresented minority students completing program	2% or less	3-5%	6-12%	More than 13%

Outcome Evaluation Question 2:
What impact is the project having on student **diversity**, enrollment, and persistence?

Indicator	Low Impact	Minimal Impact	Moderate Impact	High Impact
Percentage of women completing program	2% or less	3-5%	6-12%	More than 13%
Number of veterans enrolled	2 or fewer	3-5	5-10	More than 10
Percentage of underrepresented minority students completing program	2% or less	3-5%	6-12%	More than 13%

> Overall, the project had a high impact on the diversity of enrolled students, as determined by comparing the project results with rubrics established by project stakeholders.

Indicator	Low Impact	Minimal Impact	Moderate Impact	High Impact	
Percentage of women completing program	2% or less	3-5%	6-12%	More than 13%	15%
Number of veterans enrolled	2 or fewer	3-5	5-10	More than 10	8%
Percentage of underrepresented minority students completing program	2% or less	3-5%	6-12%	More than 13%	13.5%

Rubrics can be qualitative, too

Indicator	Low Engagement	Minimal Engagement	Moderate Engagement	High Engagement
Industry engagement	There is little or no tangible evidence of involvement by industry in any aspect of program	Industry involvement mainly characterized by attendance at meetings, with limited input on program	Industry involvement has provided important contributions to certain aspects of program, such as advising on curriculum or offering facility tours	Industry has substantial involvement on multiple aspects of program, including direct involvement with students though workplace-based learning or mentoring

Creating rubrics, setting standards:

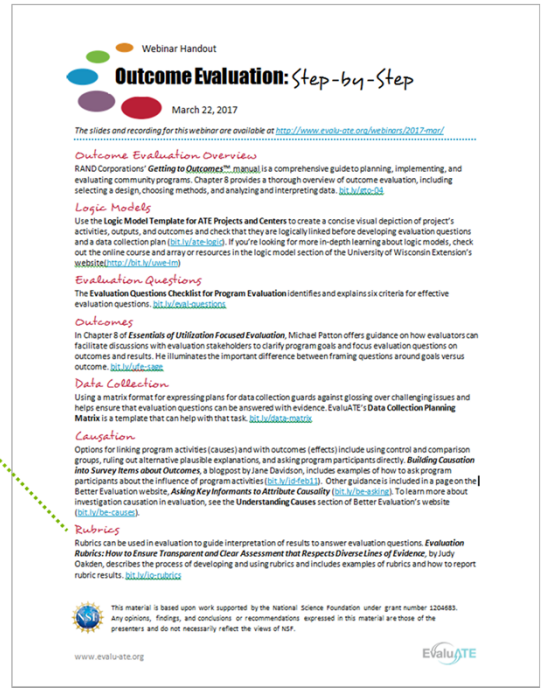
1. Research context
2. Facilitate dialogue among stakeholders
3. Draft together
4. Try out with fictional data

Summary

- ✓ Answer evaluation questions in the same terms in which they are asked.
- ✓ Make interpretive processes explicit and transparent.

Resources

Guide to developing and using rubrics in evaluation



Webinar Handout

Outcome Evaluation: Step-by-Step

March 22, 2017

The slides and recording for this webinar are available at http://www.evalu-ate.org/webinars/2017-mar/

Outcome Evaluation Overview

RAND Corporations' ***Getting to Outcomes™*** manual is a comprehensive guide to planning, implementing, and evaluating community programs. Chapter 8 provides a thorough overview of outcome evaluation, including selecting a design, choosing methods, and analyzing and interpreting data. bit.ly/gto-04

Logic Models

Use the **Logic Model Template for ATE Projects and Centers** to create a concise visual depiction of project's activities, outputs, and outcomes and check that they are logically linked before developing evaluation questions and a data collection plan (bit.ly/ate-logic). If you're looking for more in-depth learning about logic models, check out the online course and array or resources in the logic model section of the University of Wisconsin Extension's website(http://bit.ly/uwe-lm)

Evaluation Questions

The **Evaluation Questions Checklist for Program Evaluation** identifies and explains six criteria for effective evaluation questions. bit.ly/eval-questions

Outcomes

In Chapter 8 of ***Essentials of Utilization Focused Evaluation***, Michael Patton offers guidance on how evaluators can facilitate discussions with evaluation stakeholders to clarify program goals and focus evaluation questions on outcomes and results. He illuminates the important difference between framing questions around goals versus outcome. bit.ly/ufe-sage

Data Collection

Using a matrix format for expressing plans for data collection guards against glossing over challenging issues and helps ensure that evaluation questions can be answered with evidence. EvaluATE's **Data Collection Planning Matrix** is a template that can help with that task. bit.ly/data-matrix

Causation

Options for linking program activities (causes) and with outcomes (effects) include using control and comparison groups, ruling out alternative plausible explanations, and asking program participants directly. ***Building Causation into Survey Items about Outcomes***, a blogpost by Jane Davidson, includes examples of how to ask program participants about the influence of program activities (bit.ly/id-feb11). Other guidance is included in a page on the Better Evaluation website, ***Asking Key Informants to Attribute Causality*** (bit.ly/be-asking). To learn more about investigation causation in evaluation, see the **Understanding Causes** section of Better Evaluation's website (bit.ly/be-cause).

Rubrics

Rubrics can be used in evaluation to guide interpretation of results to answer evaluation questions. ***Evaluation Rubrics: How to Ensure Transparent and Clear Assessment that Respects Diverse Lines of Evidence***, by Judy Oakden, describes the process of developing and using rubrics and includes examples of rubrics and how to report rubric results. bit.ly/jo-rubrics

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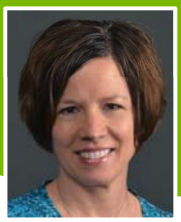
www.evalu-ate.org EvaluATE

Questions?


Lori

Miranda

Thank you!