

Safety and Health in Wind Energy

**Strategies for Small Wind Energy Businesses
Targeted Topic Training**

Facilitator Manual Tailgate

Developed by the University of Wisconsin Oshkosh,
Center for Career Development and Employability Training

In cooperation with the Occupational Safety and Health Administration
and funded by a Susan B. Harwood Grant



**Center for Career Development
and Employability Training
(CCDET)**

The vision of CCDET is to be the provider of choice for innovative training and support services to Wisconsin public agencies.

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INTRODUCTION

This *Safety and Health in Wind Energy* training program is sponsored by a grant made available through the Susan Harwood Training Grant Program. This grant program is administered by the United States Department of Labor, Occupational Safety and Health Administration (OSHA).

The purpose of the Susan Harwood Training Grant Program is to provide training and education programs that will help employers and workers recognize, avoid and prevent safety and health hazards in their workplaces.

This particular training program was developed by the University of Wisconsin Oshkosh's Center for Career Development and Employability Training (CCDET). Recognized as a leader in regional and state training for more than two decades, CCDET offers creative solutions and support services to federal, state and local organizations. CCDET creates new approaches and modify existing strategies, providing training and support services to meet the unique needs of agencies and organizations, both large and small.

The purpose of the *Safety and Health in Wind Energy* training program is to address hazards related to the installation, maintenance and demolition of wind turbines. During this program, employees will gain the knowledge and basic skills to:

- Identify the ten critical processes used in constructing, maintaining and demolishing wind turbines, particularly as they relate to their worksites.
- Identify the general safety and health hazards associated with these ten processes.
- Perform a job hazard analysis of the processes used at their worksites to identify specific hazards.
- Recognize regulatory standards and requirements pertaining to the hazards they find at their worksites.

- * Identify ways to control and eliminate the hazards you find at your worksite as a means of preventing injuries and deaths.
- * Recognize obstacles to using safe work practices at your worksite and identify suggestions for addressing them.

The content in this training program will reflect the needs and characteristics of small businesses and their workers in the wind energy industry. You will receive a variety of resources and tools so you can take the content from this program and use it on the job in two ways. First you can use the materials yourself to practice your own job in a safe manner. Second, you can use the materials to teach others at your worksite the important principles of working in a safe manner.

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Outdoor Climbs

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Todd Sturz—Peg Climber

Indoor Climb

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Kyle Guthrie—Photographer

Struck-By Demonstration

Aaron VandenBloomer—Climber
Joshua Goede—Ground Worker

Delivery Considerations

The *Safety and Health in Wind Energy* training program can be delivered in three ways.

- **Classroom Train-The-Trainer.** With this method, certified safety trainers will use the materials to train a one-day class of owners, managers and trainers in the wind energy business. The goal of this training is twofold. First, participants will learn how to recognize and control hazards in the installation, maintenance and demolition of wind turbines. Second, participants will learn how to teach their own employees how to recognize and control these hazards.
- **Classroom.** With this method, owners and managers in the wind energy business will use the materials to teach a one-day class to their own employees. The goal of this training is to teach employees how to recognize and control hazards at their worksites.
- **Tailgate Sessions.** With this method, owners and managers in the wind energy business will use the materials to conduct tailgate sessions with small groups of employees. These sessions can be conducted either in a meeting room or at the worksite. Ideally, they will be conducted in a *just-in-time* manner so that employees learn how to recognize and control hazards at the time they might be encountering them.

Program Materials

Four resources support the *Safety and Health in Wind Energy* training program.

Facilitator Manual. This manual comes in two parts: a classroom portion and a tailgate portion. You are currently reading the tailgate portion, which provides suggestions for delivering this course content in a series of short tailgate sessions right at your worksite. The classroom portion provides suggestions for delivering the course in a classroom setting.

Participant Booklet. This booklet can be used in either the classroom or the tailgate training. It is available in PDF format on the *Tools and Resources* CD. If you are using the booklet to teach the tailgate sessions, the lesson plan for each tailgate session will tell you which pages from the Participant Booklet you should use.

Tools and Resources CD. This disk contains the tools and resources related to the training program, including the following.

- ◆ This Participant Booklet
- ◆ The PowerPoint slides required to teach the classroom version of the program
- ◆ A Facilitator Manual that gives you step-by-step instructions for conducting this class for other employees at your worksite
- ◆ An additional Facilitator Manual that gives you instructions for teaching this material in shorter tailgate sessions at your worksite
- ◆ All of the forms introduced in this program
- ◆ A variety of OSHA forms related to the topics in this program
- ◆ A variety of publications related to the topics in this program
- ◆ A list of resources where you can find additional information
- ◆ The pre-course test with answer key
- ◆ The post-course test with answer key

PowerPoint Slides. There will be PowerPoint slides available for use with an LCD projector. These will be used by the facilitator during the classroom training.

Preparing to Teach the Program Using the Tailgate Format

Since the tailgate format will be taught in small segments, the facilitator need only prepare for the segment being taught. Following is a checklist to help facilitators prepare.

- Think about where you will hold the tailgate session.
- Read the Tailgate Facilitator Manual for the segment you will be using.
- Review the appropriate materials in the Participant Booklet and determine which ones to copy and pass out to employees.

TAILGATE SESSION 1 EMPLOYEE RIGHTS AND EMPLOYER RESPONSIBILITIES

Purpose of Session

To introduce employees to the employer's responsibilities and the employee's rights under OSHA for a safe working environment

Recommended Time: 10 minutes

Pages from Participant Booklet: 9-10

Additional Materials: The OSHA Poster

Recommended Approach for Teaching

Cues	What to Do or Say
Page 9	<ul style="list-style-type: none">■ Hand out Page 9 to employees. Tell them the law encourages workers to be active players in workplace safety.■ The 14 points on this page describe their rights under the OSH Act.■ Review the 14 points and say that in general they address two categories.<ul style="list-style-type: none">– The employee's right to obtain information regarding their safety and health on the job.– Their right to act on behalf of their own safety.■ Provide employees with information regarding how they can obtain safety information at your business.■ Answer any questions they have.

Page 10

OSHA Poster

- Hand out Page 10 to employees. Tell them that employers also have rights and responsibilities under OSHA.
- Review the 15 points on this page and point out that in general they form three categories.
 - How employers can provide a safe work environment.
 - The requirement to report accidents.
 - The requirement to keep records.
- Take some time to share with employees how OSHA works with your company to provide a safe workplace.
- Following are some suggestions for things you might do.
 - Show them the OSHA poster and tell them where they can find these posters at your worksite.
 - Tell them where they can locate the name and phone number of your OSHA representative.
 - Describe to them the relationship you have with the OSHA representative.
 - Describe the policies and procedures you have in place to ensure a safe working environment.
 - Tell employees how they can obtain access to the various medical and exposure records you maintain.
 - Tell employees how to request your company's log of Work-Related Occupational Injuries and Illnesses (OSHA 300).

- Ask employees how they think your company is doing in providing them with the tools and information they need to be safer on the job.
- Answer any questions they have.

Additional Steps You Can Take

Obtain the OSHA poster mentioned in Item #7 on Page 10, and display it prominently in the break room and in others areas of the workplace where employees will see it.

TAILGATE SESSION 2 THE JOB HAZARD ANALYSIS

Purpose of Session

To introduce employees to the job hazard analysis, and to encourage them to perform a job hazard analysis for every job they perform

Recommended Time: 15 minutes

Pages from Participant Booklet: 11-13

Recommended Approach for Teaching

Cues	What to Do or Say
Pages 11-13	<ul style="list-style-type: none">■ Distribute Pages 11-13 to employees.
Page 11	<ul style="list-style-type: none">■ Refer employees to the top box on Page 11. Tell them that an important method for ensuring a safe working environment is the job hazard analysis.■ Ask employees what a job hazard analysis is, and get a few responses from them.■ Tell employees that in a job hazard analysis they would break a job down in to all of its component steps, look at the potential hazards in each step, then look for ways to eliminate or control each hazard.■ Refer employees to the middle of page 11 and review the steps for performing a job hazard analysis. Answer any questions.■ Refer employees to the bottom box on Page 11. Ask the question in the box, then get some ideas from employees. Following are some of the responses you can expect (or share).

Page 12

- Look at equipment for fire, mechanical, pneumatic, electrical or hydraulic hazards.
 - Look at the environment for noise, fall hazards, places where a person can get caught on or in between things, places where a person might overexert him/herself, places where a person can get struck by something, potential for overexposure to heat or cold, or potential for ergonomic problems.
 - Look at work practices and employee behavior such as wearing one's PPE or following lockout/tagout procedures.
- Refer employees to Page 12. Remind them that when they find a hazard on the job, it is important also to find a control.
 - Tell them there are three levels of control for hazards.
 - When you introduce engineering controls, emphasize that these are the most preferred control.
 - Ask for some examples of this type of control, which include:
 - Redesign of equipment to eliminate the hazard.
 - Substitution of equipment, material or a process.
 - Use of barriers or shields.
 - Tell employees that an example of this type of control in the wind industry is assembling a tower horizontally to eliminate the need for climbing, which eliminates falling hazards.
 - When you introduce administrative controls, emphasize that these are the second most preferred type of control.

- Ask for some examples of this type of control, which include:
 - Training and education.
 - Adjusting work schedules and rotating assignments to reduce exposure.
 - Maintenance.
 - Good housekeeping.
 - Lockout/tagout.
- Tell employees that an example of this type of control in the wind industry is this tailgate session.
- When you introduce personal protective equipment as a control, emphasize that this is a control method of last resort. It is the least desirable because you aren't getting rid of the hazard, you are just protecting employees from injury in the event the hazard causes an accident.
- Ask for some examples of this type of control, which include:
 - Headgear.
 - Fall protection.
 - Hearing protection.
 - Footwear.
 - Eye and face protection.
- Tell employees that an example of this type of control in the wind industry is having a reliable fall protection system.
- Refer employees to Page 13. Tell them that they are now going to do a job hazard analysis for the job they will be performing today.
- Discuss with employees the job they will be working on today. If different employees are doing different jobs, have each employee work on the specific job they will be performing.

- Work with employees to fill out the form.
 - Help employees identify the sub steps for the jobs they will be performing
 - Help employees identify the potential hazards associated with each step.
 - Help employees identify the possible controls for each hazard.
- Before having employees go to work, make certain they will be using the controls they identified.
- If the control an employee identifies is not available, help him or her identify another control that is available at this time.
- Tell employees that they will be expected to perform a job hazard analysis every time they perform a job or task.
- Consider purchasing or adopting the best controls.
- The goal over the long term is to continually improve their safety over time.

TAILGATE SESSION 3 THE PROJECT HAZARD ANALYSIS

Purpose of Session

To introduce employees to the project hazard analysis, and to encourage them to perform a project hazard analysis for every new major project they undertake

Recommended Time: 10 minutes

Pages from Participant Booklet: 14-15

Recommended Approach for Teaching

Cues	What to Do or Say
Pages 14-15	<ul style="list-style-type: none">■ Distribute Pages 14-15 to employees.■ Tell them that this is a sample project hazard analysis form provided to the class by Orion, L.L.C.■ This is a good form to use when they begin a project at a wind farm and want to assess the hazards in the overall project.■ Review the Orion form by making the following points:<ul style="list-style-type: none">– Section 1: Identifies the physical location of the job site.– Section 2: Identifies the people on the project, including whether or not they are trained in first aid/CPR.– Section 3: Identifies emergency procedures. This is important because it makes you think about how to evacuate a site in an emergency, or how to rescue a person in distress at height.– Section 4: The analysis of the tasks, their hazards and controls. It's an abbreviated version of the exercise we just did on Page 13.

- Section 5: Lists a number of possible hazards you might encounter at a site.
- Section 6: Lists some possible controls you can use.
- Section 7: Provides for an analysis of a job site where there is an excavation.
- Section 8: Provides for an analysis of a job site where people will be working at heights.
- Section 9: Is for supervisory signoffs.
- When you are finished reviewing this form, refer employees back to Section 5. Ask them how they can learn about whether a job site has a chemical or silica exposure.
- Get a few responses, then make the following points.
 - Whenever a chemical is shipped from a supplier, it must be accompanied by a Materials Safety Data Sheet (MSDS).
 - An MSDS is a form used to comply with OSHA’s Hazard Communication Standard.
 - The MSDS can help a person identify potential chemical hazards related to the substances they are using at the job site.
 - You can get more information about the MSDS on the *Tools and Resources* CD.
- Tell employees that the project hazard analysis form can be found on their *Tools and Resources* CD.

Additional Steps You Can Take

Create a project hazard analysis form that is specifically tailored to your workplace. Use the Orion project hazard analysis form (Pages 14-15 of the Participant Booklet) as a template. Delete items on that form that do not apply to your workplace, and add items that do apply. An electronic copy of the form is on your *Tools and Resources* CD.

TAILGATE SESSION 4 FACTS ABOUT FALLS CHALLENGE

Purpose of Session

To introduce employees to some facts about falls

Recommended Time: 10 minutes

Page from Participant Booklet: 17

Recommended Approach for Teaching

Cues	What to Do or Say
Page 17	<ul style="list-style-type: none">■ Tell employees that this tailgate and the next five will be about making their worksites safe from falls.■ This particular tailgate is a fun way to introduce them to some facts about falls at worksites.■ Distribute Page 17 to employees along with pencils if employees need them.■ Review the questions one at a time by doing the following for each question:<ul style="list-style-type: none">– Read the question.– Ask employees to stand in one of four separate locations depending on their answer (example—people who answer A stand to your left, B in front of you and slightly left, C in front of you and slightly right, and D to your right).– Give the correct answer and the explanation.– Congratulate the group who got the correct answer.■ Following are the answers and explanations to the questions.■ Question 1: Correct answer is D. The leading cause of death from falls is falling from heights.

- Elaborate on this question by asking employees what can cause a fall from heights.
- Get their ideas, then add any of the following that aren't mentioned:
 - Loss of grip or balance caused by wind or other factors.
 - Icy conditions.
 - Objects falling from above.
 - Workers at different levels, where a person working above kicks or disturbs a person working below.
 - Lack of a platform for working.
 - Panic.
- Note: the source for this quiz question is <http://www.osha.gov/SLTC/etools/construction/falls/mainpage.html>.
- **Question 2:** Correct answer is C. Nearly a third of all construction deaths come from falls.
- Note: the source for this quiz question is <http://www.osha.gov/SLTC/etools/construction/falls/mainpage.html>.
- **Question 3:** Correct answer is C. OSHA 1926.502(d)(9) describes the required strength of lanyards and vertical lifelines. There should be a minimum breaking strength of 5,000 pounds.
- **Question 4:** Correct answer is A. OSHA 1926.502(d)(16)(iii) provides the guideline for free falling distance, which is no more than 6 feet.
- Thank employees for participating in this quiz, and reinforce that you'll be presenting them with additional fall safety information in tailgates to come.

Additional Steps You Can Take

To thank employees for participating in this tailgate, bring donuts for everyone to enjoy while they are participating.

TAILGATE SESSION 5 ANATOMY OF A FALL

Purpose of Session

To introduce employees to the facts about how quickly falls happen and how fast a person can fall a great distance

Recommended Time: 10 minutes

Page from Participant Booklet: 18

Recommended Approach for Teaching

Cues	What to Do or Say
	<ul style="list-style-type: none">■ Give Page 18 to employees and tell them you would like to introduce them to the anatomy of a fall.■ Point out that some people assume they can grab hold of something if they feel they are about to fall.■ But this chart illustrates just how unlikely it is that a person would be able to react in time.■ Review the points at the bottom of Page 18.■ Point to the tower employees will be working on today and ask them to identify a point toward the top of the tower.■ Have them visualize falling 64 feet from that point, and ask what they think would happen.■ Get some responses, then end this session by emphasizing they should wear their fall protection gear whenever they work at height and always take extra care to ensure it is put on properly.

TAILGATE SESSION 6 PREPARING A JOB HAZARD ANALYSIS FOR FALL SAFETY

Purpose of Session

To get employees to assess their worksites for fall hazards and identify some controls

Recommended Time: 15 minutes

Page from Participant Booklet: 24 (for Option 1)
13 or your own customized job hazard analysis form
(for Option 2)

Recommended Approach for Teaching

Cues	What to Do or Say
Facilitator Note	<ul style="list-style-type: none">■ You have two options for facilitating this tailgate session.<ul style="list-style-type: none">– Use page 24 and have employees assess the potential hazards for all the processes listed on the page.– Use your actual worksite and have employees assess the potential fall hazards at that worksite.
Option 1	<ul style="list-style-type: none">■ Give Page 24 to employees.■ Tell them that this page lists typical activities that occur during construction and maintenance of wind turbines.■ Ask them to identify the processes they most frequently find themselves performing.■ For each item on Page 24 that applies to your organization, ask employees to:<ul style="list-style-type: none">– Identify the potential fall hazards.– Identify some controls that can protect workers from these hazards.

- Following are some potential answers you might receive.
- **Item 1**—Working when ground conditions are icy
 - **Hazard:** Employee could slip on ice.
 - **Control:** Salt or sand the icy area.
 - **Control:** Wear non-skid shoes or boots.
- **Item 2**—Walking on a rebar surface
 - **Hazard:** Foot could get stuck in space between the rebar.
 - **Control:** Build the rebar so that feet can't fall through.
 - **Hazard:** A person could trip on the rebar.
 - **Control:** Build a solid walking path for employees to use while walking from one part of the rebar to another.
- **Item 3**—Standing on a trailer while offloading turbine components.
 - **Hazard:** Workers could lose their balance and fall off of the truck.
 - **Control:** Have a spotter on the ground to watch the person working on the truck.
 - **Control:** Place a raised platform beside the truck so the working employee can't fall all the way to the ground.
- **Item 4**—Climbing a lattice or a monopole (freestanding) tower
 - **Hazard:** Employee could lose grip and fall.
 - **Hazard:** Employee could lose balance and fall.
 - **Control:** Use fall arrest protection at all times.
- **Item 5**—Transferring from tower to nacelle platform
 - **Hazard:** Employee could lose balance and fall.
 - **Hazard:** Employee could lose grip during reach.
 - **Control:** Make certain fall arrest system is attached at all times, especially during transfer.

- **Item 6**—Climbing inside the tower.
 - **Hazard:** Employee could lose grip and fall.
 - **Hazard:** Employee could lose balance and fall.
 - **Control:** Use fall arrest protection at all times.

- **Item 7**—Attaching/bolting tower segments
 - **Hazard:** Employee could lose footing and fall.
 - **Hazard:** One employee could knock the other off balance.
 - **Hazard:** Employee could lose balance.
 - **Control:** Fall arrest systems should be worn and attached to the tower at all times.

- **Item 8**—Working in a man-lift basket
 - **Hazard:** If employee reaches too far, could lose balance and fall out of basket.
 - **Control:** Position basket to minimize employee reaching.

- **Item 9**—Attaching rotor blades to nacelle
 - **Hazard:** Employee could lose footing and fall.
 - **Hazard:** Employee could lose balance.
 - **Hazard:** Rotor blade could knock employee off balance.
 - **Control:** Fall arrest systems should be worn and attached to anchor points at all times.
 - **Control:** Rotor blade should be secured to minimize movement.

- **Item 10**—Working outside nacelle and transferring to the hub
 - **Hazard:** Employee could lose grip and fall.
 - **Hazard:** Employee could lose balance and fall.
 - **Control:** Fall arrest systems should be worn and attached to anchor points at all times.

Option 2

- **Item 11**—Working inside nacelle
 - **Hazard:** Employee could trip on tools or other items on floor.
 - **Control:** Keep floor free of debris.
- Give either Page 13 or your company’s own job hazard analysis form to employees.
- Tell them that they’re going to be performing a job hazard analysis for fall hazards on the site where they will be working today.
- Have employees identify the tasks they will be performing. For each task, ask them to do the following.
 - Identify the potential fall hazards.
 - Identify some controls that can protect workers from these hazards.
- Once employees have identified some controls, differentiate between the controls that you are already using at the worksite and any new controls that might be worth acquiring.
- Do this by asking the following questions, then listening to what employees say:
 - Do you feel that the controls we are currently using are keeping us as safe from falls as possible?
 - If we wanted to take this worksite to the next level of safety in fall prevention, what could we do?
 - Is there anything else we should be doing to keep this site as safe as possible from falls?

Both Option 1 and Option 2

Additional Steps You Can Take

Consider investing in some of the fall controls that are identified in this tailgate session.

TAILGATE SESSION 7 BEST PRACTICES FOR FALL SAFETY

Purpose of Session

To introduce employees to some of the best practices for preventing falls that are derived from the OSHA regulations

Recommended Time: 20 minutes (5 minutes pre-tailgate, and 15 minutes during tailgate)

Pages from Participant Booklet: 25-26

Recommended Approach for Teaching

Cues	What to Do or Say
Facilitator Note	<ul style="list-style-type: none">■ This tailgate will work best if you ask your employees to fill out the assessment before the tailgate meeting, then have them come to the meeting prepared to discuss it.
Before the Tailgate Session	
Pages 25 and 26	<ul style="list-style-type: none">■ Give employees Pages 25 and 26. Tell them that you want them to do an assessment of practices in the business that will help you determine where fall safety practices can be improved.■ Tell them that the items on these two pages are derived from OSHA regulations related to falls.■ It is a list of practices that, if done consistently, can reduce the risk of falls at their worksites.■ Ask them to go through the list and rate how they feel the company does on each of these practices.■ Tell them to come to the tailgate session prepared to discuss the assessment.

At the Tailgate Session

- Thank employees for completing the best practices assessment for fall hazards.
- Start by asking employees to identify areas that they rated with a 3. These are the practices you do well and employees should be congratulated for them.
- Then ask employees to identify the practices they feel could be done more consistently (items rated with a 2).
- Listen carefully as employees share this information, and ask them for ideas on how the company can improve in these areas.
- Finally, ask employees to identify one or two areas where they think fall safety practices could be improved (items rated with a 1).
- Get their ideas for how to improve.
- After employees have shared their ideas, thank them.
- Encourage them to implement ideas for improvement that can be done right away (adopting new procedures, improving a practice).
- Make a commitment to them to invest in and implement some of the longer term recommendations they have shared.

Additional Steps You Can Take

Consider investing in and implementing some of the ideas employees have shared.

TAILGATE SESSION 8

PROPER WEAR AND USE OF YOUR FALL ARREST SYSTEM

Purpose of Session

To provide training on the proper wear and use of your company's fall arrest system

Recommended Time: 30 minutes

Resources Required: One set of fall protection gear for each employee at the worksite
One copy of your company's fall protection procedures for each employee at the worksite.

Recommended Approach for Teaching

Cues	What to Do or Say
Facilitator Note	<ul style="list-style-type: none"> ■ This tailgate session should be conducted every time an employee uses your fall protection equipment for the first time. ■ It should also be conducted as a refresher and review session at the beginning of every new turbine construction or maintenance project. ■ Assemble employees at the base of the tower they will be climbing.
Fall Protection Procedures	<ul style="list-style-type: none"> ■ Hand out a copy of your company's fall protection procedures to each employee. ■ Review the procedures and answer questions employees have.
Fall Protection Gear	<ul style="list-style-type: none"> ■ Ask for a volunteer. Tell employees this volunteer is going to demonstrate how to properly put on the fall protection gear and attach it to the tower. ■ Go through each step of putting on the gear and attaching it to the tower. Cover as much of the following points as possible. <ul style="list-style-type: none"> – Type of harness. – Type of climbing structure harness is designed for (ladder, foot pegs, as on a monopole, or lattice style structures).

- Rating of harness. Harness must be strong enough to support weight of the person **plus** anything brought along.
 - Use of waistbands and their purpose (if you use them).
 - The purpose of the D-ring on the chest. A steel cable attaches to D-ring, enabling a person to climb hands free. Maximum free-fall distance with this system is two feet.
 - Purpose of waist D-rings: to allow employees to carry equipment without having to hold it.
 - Description of the leg straps: to distribute the weight.
 - Description of the twin-arm lanyards. These lanyards get attached to anchor points using the large pelican clips.
 - Note that anchor points must be rated to 5,000 pounds.
 - Explanation of anchor points. At times, anchor points will be colored yellow and labeled.
 - However, if you can't find a marked anchor point, and you must use your judgment, ask yourself if the anchor point you are about to use could support a full-sized truck. That is the equivalent of 5,000 pounds.
 - Description of drawstring pouches attached to the waist D-rings. These are for carrying any necessary equipment (gloves, cell phones, radios, tools, camera, extra carabiners).
 - Description of hard hats. A best practice is to have them rated for both top and side impact.
 - Note how important it is to have employees check each other's equipment so that they don't have a false connection (attached to hair or a hood). The partner ensures the snap hook is fully engaged and closed at the back D-ring.
- Answer any questions employees have.
 - Allow time for each employee to put on gear as you check them and they check each other.

Additional Steps You Can Take

Consider showing some of the climbing videos that are on the *Tools and Resources CD*. You can find them on your *Tools and Resources CD* in the *Facilitator Materials* folder, then in the *Videos* folder, then in the *Optional Videos* folder.

TAILGATE SESSION 9 THE FALL RESCUE PLAN

Purpose of Session

To provide employees with information about your company's fall rescue plan

Recommended Time: 30 minutes

Resources Required: One copy of your company's fall rescue plan for each employee
Note: If your company doesn't have a fall rescue plan, you need to develop one before conducting this tailgate. Use page 28 of the Participant Booklet as a guide for preparing this plan.

Recommended Approach for Teaching

Cues	What to Do or Say
Facilitator Note	<ul style="list-style-type: none">■ This tailgate session should be conducted every time your business starts work on a new turbine construction or maintenance project.
Rescue Plan	<ul style="list-style-type: none">■ Assemble employees at the base of the tower they will be climbing. Hand out one copy of your company's fall rescue plan to each employee.■ Begin your discussion by pointing out that no one ever intends to fall, but what would they do if one of them suddenly fell and became suspended out of reach toward the top of the tower?■ Get some of their responses, then tell them this is why it is important to have a rescue plan in place <u>before</u> a fall.■ It is also important to review the plan on a regular basis, which is what you are doing now.■ Review the procedures you have outlined on your rescue plan.■ Show employees where they can find the equipment and supplies they will need during a rescue.■ Allow plenty of time for questions.

TAILGATE SESSION 10 FACTS ABOUT ELECTRICITY CHALLENGE

Purpose of Session

To introduce employees to some facts about electricity

Recommended Time: 10 minutes

Page from Participant Booklet: 31

Recommended Approach for Teaching

Cues	What to Do or Say
Page 31	<ul style="list-style-type: none">■ Remind employees of the quiz they took related to falls in the workplace.■ Now they are going to have another quiz to learn some facts about electrical safety at worksites.■ Distribute Page 31 to employees along with pencils if employees need them.■ Review the questions one at a time by doing the following for each question:<ul style="list-style-type: none">– Read the question.– Ask employees to stand in one of four separate locations depending on their answer (example—people who answer A stand to your left, B in front of you and slightly left, C in front of you and slightly right, and D to your right).– Give the correct answer and the explanation.– Congratulate the group who got the correct answer.■ Following are the answers and explanations to the questions.■ Question 1: Correct answer is C. On average 350 workers die in electrical accidents every year.■ Point out that this is the equivalent of almost one death from electrical injury every day!

- Note: the source for this quiz question is http://www.osha.gov/SLTC/etools/construction/electrical_incidents/mainpage.html.
- **Question 2:** Correct answer is C.
- Emphasize that this statistic does apply to them because when they erect a wind turbine, they are doing construction.
- Ask employees: Why do you think the construction industry has so many more electrocutions than other industries?
- Get their responses. Some ideas that may come up are:
 - Construction workers are around electricity more than other workers and are therefore exposed to it more.
 - Construction workers are often working with electrical tools and equipment to do their jobs.
 - The entire goal of erecting a turbine is to make electricity, so of course they will be exposed to it.
- Emphasize once again that ALL employees work around electricity. Therefore ALL employees need to practice electrical safety.
- Note: the source for this quiz question is the NIOSH publication titled *Worker Deaths by Electrocution*, page 14. You can find this publication on your *Tools and Resources* CD.
- **Question 3:** Correct answer is D. OSHA 1910.147(a)(1)(i) describes when lockout/tagout should be used to prevent electrical injury.
- **Question 4:** Correct answer is B. Equipment operating around power lines must maintain at least a ten foot clearance from the overhead power lines.
- OSHA 1926.600(a)(6) the distance you should maintain when operating equipment around power lines.
- Tell employees that operating equipment around overhead power lines is extremely dangerous, so it is important to adhere to this regulation.

Additional Steps You Can Take

To thank employees for participating in this tailgate, bring donuts for everyone to enjoy while they are participating.

TAILGATE SESSION 11

PREPARING A WORKSITE ANALYSIS FOR ELECTRICAL SAFETY

Purpose of Session

To get employees to determine where there are potential electrical hazards at their worksites

Recommended Time: 15 minutes

Page from Participant Booklet: 32 (for Option 1)
13 or your own customized job hazard analysis form
(for Option 2)

Recommended Approach for Teaching

Cues	What to Do or Say
Facilitator Note	<ul style="list-style-type: none">■ You have two options for facilitating this session.<ul style="list-style-type: none">– Use page 32 and have employees perform a worksite analysis by identifying where they might find the hazards from Page 32 at their worksites.<li style="text-align: center;"><u>OR</u>– Use your actual worksite and have employees perform a standard job hazard analysis for electrical hazards at their worksites.
Option 1	<ul style="list-style-type: none">■ Give Page 32 to employees.■ Tell them that this page lists a number of electrical hazards that are often present at construction-related worksites.■ For each item, they should list where in their workplace this specific hazard might be found.■ Allow some time for employees to complete the page on their own, then discuss their answers as a group.

Option 2

- Give either Page 13 or your company's own job hazard analysis form to employees.
- Tell them that they're going to be performing a job hazard analysis for electrical hazards on the site where they will be working today.
- Have employees identify the tasks they will be performing. For each task, ask them to do the following.
 - Identify the potential electrical hazards.
 - Identify some controls that can protect workers from these hazards.

Both Options 1 and 2

- Once employees have identified some controls, differentiate between the controls that you are already using at the worksite and any new controls that might be worth adopting.
- Do this by asking the following questions, then listening to what employees say:
 - Do you feel that the controls we are currently using are keeping us as safe from electrical injuries as possible?
 - If we wanted to take this worksite to the next level of electrical safety, what could we do?
 - Is there anything else we should be doing to keep this site as safe as possible from electrical injuries?

Additional Steps You Can Take

Consider investing in some of the electrical safety controls that are identified in this tailgate session.

TAILGATE SESSION 12

ELECTRICAL HARM AND GROUND FAULT CIRCUIT INTERRUPTERS (GFCI)

Purpose of Session

To illustrate the harm that can come from contact with electricity and to emphasize the importance of using ground fault circuit interrupters (GFCI) to protect employees from shock

Recommended Time: 15 minutes

Pages from Participant Booklet: 33 and 34

Recommended Approach for Teaching

Cues	What to Do or Say
Facilitator Note	<ul style="list-style-type: none">■ This tailgate session should be presented any time employees will be working with or near electricity.
Pages 33 and 34	<ul style="list-style-type: none">■ Distribute Pages 33 and 34 to employees.■ As you review these two pages, emphasize that as long as they are using and working around electricity, they will encounter electrical hazards and should be prepared to eliminate or control them.
Page 33	<ul style="list-style-type: none">■ Refer employees to the top of Page 33.■ State that electricity is a funny thing. You can't see or taste it, but if you come into contact with it, it can do considerable harm.■ Using the chart and diagram on Page 33, discuss the effects on the human body of the various amperages.■ Ask employees if they know the amperage of the electricity they will be working around today.■ Get a few ideas, then let them know the actual amperage.■ Emphasize the damage that can be done by discussing the bottom of Page 33.

Page 34

- Refer employees to Page 34. Tell them that it is important to use a ground fault circuit interrupter (GFCI) with on open neutral protection at their worksites.
- Refer employees to the middle of Page 34. Use the diagram to discuss reverse polarity.
- Close by pointing out that reverse polarity is just one example of why using a GFCI is so important.
- Answer employee questions.

Additional Steps You Can Take

Consider having a GFCI on hand so that you can show it when you talk about ground fault circuit interrupters.

TAILGATE SESSION 13 WORKING AROUND POWER LINES

Purpose of Session

To introduce the safety precautions and regulations relating to operating equipment around power lines

Recommended Time: 10 minutes

Pages from Participant Booklet: 35

Recommended Approach for Teaching

Cues	What to Do or Say
Facilitator Note	<ul style="list-style-type: none">■ This tailgate session should be presented any time employees will be working with equipment around overhead power lines. It is best if you can conduct it near the power lines around which they will be working.■ Assemble employees at the worksite.
Page 35	<ul style="list-style-type: none">■ Distribute Page 35. Tell employees that today's tailgate will discuss the safest way to work around overhead power lines.■ Begin by telling them that they must assume that all power lines are energized unless the utility company has confirmed that the power line has been de-energized and visibly grounded at the worksite.■ Tell them that, according to OSHA, they must make a hazard assessment before starting work.■ Based on this hazard assessment, they must demarcate boundaries for working.■ Review the three options listed on Page 35.

- Ask employees which option they believe applies in this instance.
- Get some responses, then confirm the correct option.
- Refer employees to the flowchart at the bottom of Page 35. Review this chart in the context of the current project you are working on.
- Make sure every employee understands the option that will be used for this project.
- Review the procedures employees should use as they implement this option.
- Answer employee questions.

TAILGATE SESSION 14 THE DANGER OF ARC FLASH

Purpose of Session

To introduce employees to what an arc flash is, some facts about arc flash and some ways to prevent injury from arc flash. Also to introduce employees to the limits of approach.

Recommended Time: 10 minutes

Pages from Participant Booklet: 36 and 37

Video: Use the video titled *Arc Flash Explosion*. It can be found on your *Tools and Resources CD* in the *Facilitator Materials* folder, then in the *Videos* folder, then in the *Classroom Videos* folder.

Recommended Approach for Teaching

Cues	What to Do or Say
Facilitator Note	<ul style="list-style-type: none">■ This tailgate session should be presented in a classroom or meeting room.■ Set up and test the video equipment ahead of time so that you are certain the video will work properly.■ If you have had an arc flash in your business at any of your worksites, you can discuss it as part of this tailgate.
Pages 36 and 37	<ul style="list-style-type: none">■ Distribute Pages 36 and 37 to employees.■ Introduce the definition of arc flash shown at the top of Page 36.■ Ask employees if they have ever seen an arc flash. (Note: if your business has had an arc flash, take time to discuss what happened.)■ Review the facts about arc flash that are in the middle of the page.

Video

- To demonstrate the power of the arc flash, show the video called *Arc Flash Explosion*.
- Emphasize that this is a controlled blast, but it illustrates how powerful these explosions are.
- Ask employees if they know where an arc flash can occur.
- Get some responses. Some possible answers are:
 - Panel boards.
 - Switchboards.
 - Motors.
 - Transformers.
 - Motor starters.
 - Drive cabinets.
 - Fuse disconnects.
- Ask employees which of the above areas might be of concern on this particular job.
- Get some responses.
- Now ask employees what they think are the causes of arc blast.
- Get some responses. Some possible answers are:
 - Proximity to a high-amp source with a conductive object.
 - Equipment failure from substandard parts.
 - Improper installation of equipment or outlets.
 - Worn or damaged equipment.
 - Broken insulation.
 - A dropped tool that causes a spark.
 - Dust, corrosion or other impurities on the surface of the conductor.
 - Accidental contact (by humans or animals).
 - Improper work procedures.
- Close the discussion by saying it doesn't take much to create conditions that could create an arc flash.

Video

Page 37

- Now ask employees what they think can happen if they are caught in an arc blast.
- Get some responses. Some possible answers are:
 - Skin burns.
 - Ignition of clothing.
 - Damage of eyesight.
 - Hearing loss/ruptured eardrums.
 - Lung collapse.
 - Concussion/loss of memory.
 - Shrapnel wounds.
 - Loss of life.
 - Lost work time.
 - Loss or damage of equipment.
- Refer employees to the bottom of Page 36 and review the things that can be done to prevent injury from arc flashes.
- Emphasize the importance of wearing fire-resistant clothing.
- To demonstrate how important fire-resistant clothing is, show the *Arc Flash Explosion* video one more time.
- At the end of the video, point out how the mannequin’s clothing has not completely burned up.
- The fire resistant clothing provided a small degree of protection against the powerful explosion.
- Refer employees to Page 37. Explain that fire-resistant clothing isn’t enough to protect employees who work in areas where arc flashes are possible.
- There also needs to be some limits of approach. The National Fire Protection Association (NFPA) has published NFPA 70E, which is a standard for electrical safety in the workplace.
- This standard identifies limits of approach for workers. These limits establish arc flash boundaries for working around energized parts.

- Use the diagram at the top of Page 37 to introduce the four boundaries surrounding the energized part.
- Review the chart on Page 37. Make the following points.
- Flash protection boundary
 - This demarks the outer zone of flash protection.
 - Employees working in this zone must wear flash protection equipment.
- Limited approach zone
 - Only qualified people can enter this zone.
 - They must wear flash protective equipment.
 - Unqualified workers are prohibited to be in this zone.
- Restricted approach zone
 - A person working in this zone is in restricted space.
 - Only qualified workers are allowed in this zone.
 - An approved written plan is required before a person can go into this zone.
 - PPE is required at all times.
 - Absolutely no body part can cross the line into the prohibited zone.
- Prohibited approach zone
 - Being in this zone is equal to being in contact with the live part.
 - Only qualified people who have highly specialized training can be in this zone.
 - There must be a risk hazard analysis and an approved written plan for working in this zone.
 - PPE for working with live parts is required.
- After you have introduced the limits of approach, answer questions.

TAILGATE SESSION 15 BEST PRACTICES FOR ELECTRICAL SAFETY

Purpose of Session

To introduce employees to some of the best practices for preventing electrical injuries that are derived from the OSHA regulations

Recommended Time: 20 minutes (5 minutes pre-tailgate, and 15 minutes during tailgate)

Pages from Participant Booklet: 38-40

Recommended Approach for Teaching

Cues	What to Do or Say
Facilitator Note	<ul style="list-style-type: none">■ This tailgate will work best if you ask your employees to fill out the assessment before the tailgate meeting, then have them come to the meeting prepared to discuss it.
Before the Tailgate Session	
Pages 38 through 40	<ul style="list-style-type: none">■ Give employees Pages 38 through 40. Tell them that you want them to do an assessment of practices in the business that will help you determine where electrical safety practices can be improved.■ Tell them that the items on these three pages are derived from OSHA regulations related to electricity safety.■ It is a list of practices that, if done consistently, can reduce the risk of electrical injuries at their worksites.■ Ask them to go through the list and rate how they feel the business does on each of these practices.■ Tell them to come to the tailgate session prepared to discuss the assessment.

At the Tailgate Session

- Thank employees for completing the best practices assessment for electrical hazards.
- Start by asking employees to identify areas that they rated with a 3. These are the practices you do well and employees should be congratulated for them.
- Then ask employees to identify the practices they feel could be done more consistently (items rated with a 2).
- Listen carefully as employees share this information, and ask them for ideas on how the company can improve in these areas.
- Finally, ask employees to identify one or two areas where they think fall safety practices could be improved (items rated with a 1).
- Get their ideas for how to improve.
- After employees have shared their ideas, thank them.
- Encourage them to implement ideas for improvement that can be done right away (adopting new procedures, improving a practice).
- Make a commitment to them to invest in and implement some of the longer term recommendations they have shared.

Additional Steps You Can Take

Consider investing in and implementing some of the ideas employees have suggested.

TAILGATE SESSION 16 USING LOCKOUT/TAGOUT

Purpose of Session

To provide refresher training on the proper use of lockout/tagout

Recommended Time: 10 minutes

Pages from Participant Booklet: 41

Recommended Approach for Teaching

Facilitator Note

- If you already have lockout/tagout procedures in your organization, bring copies of those procedures and review them instead of the ones on Page 41.

Page 41

- Hand out Page 41 to employees. Point out that lockout/tagout is a very effective way to protect workers from electrical injuries when they are maintaining equipment.
- Ask them to define lockout/tagout.
- Get some definitions, then give them the definition.
- Lockout/Tagout is a safety procedure used to ensure that electrical energy is properly shut off and not started up again until work on the system is complete. It requires the power sources to be isolated and rendered inoperable during maintenance.
- Review the procedures for lockout/tagout on Page 41.

OR

- Pass out your organization's own procedures and review them.

Additional Steps You Can Take

Bring some of locks and tags you use in your business to the class and have employees practice the correct way to use them.

TAILGATE SESSION 17

TEST YOUR KNOWLEDGE OF EXCAVATIONS

Purpose of Session

To introduce employees to some facts about excavations

Recommended Time: 10 minutes

Page from Participant Booklet: 44

Recommended Approach for Teaching

Cues	What to Do or Say
Page 44	<ul style="list-style-type: none">■ Introduce employees to their third knowledge challenge. This one will test their knowledge of excavations.■ Distribute Page 44 to employees along with pencils if employees need them.■ Review the questions one at a time by doing the following for each question:<ul style="list-style-type: none">– Read the question.– Ask employees to stand in one of four separate locations depending on their answer (example—people who answer A stand to your left, B in front of you and slightly left, C in front of you and slightly right, and D to your right).– Give the correct answer and the explanation.– Congratulate the group who got the correct answer.■ Following are the answers and explanations to the questions.

- **Question 1:** Correct answer is B.
- Tell employees that this is over one fatality a week.
- Point out that cave-ins are a very serious problem at construction sites so it is important to examine how workers can work more safely around excavations.
- Note: the source for this quiz question is <http://cdc.gov/niosh/topics/trenching/>.
- **Question 2:** Correct answer is C.
- OSHA 1926.651(c)(2) describes entry into and exit from excavations.
- If an excavation is 4 feet deep or more, it must have a ladder, ramp or stairway.
- **Question 3:** The correct answer is A.
- OSHA 1926.651(j)(2) provides this information.
- Ask employees what can be done if there isn't room to put the spoils 2 feet back.
- Acknowledge the employee who gets the correct answer, which is that a retention system has to be built around the site to retain the spoils.
- Ask employees what should be done if it is not possible to build a retention system.
- Again, acknowledge the employee who gets the correct answer, which is that the spoils would have to be hauled away to another location
- **Question 4:** Correct answer is C.
- OSHA 1926.651(l) Subpart P gives the guidelines for when excavations should have protection systems.
- Thank employees for participating in this quiz.

Additional Steps You Can Take

To thank employees for participating in this tailgate, bring donuts for everyone to enjoy while they are participating.

TAILGATE SESSION 18

WORKSITE ANALYSIS FOR EXCAVATION HAZARDS

Purpose of Session

To get employees to assess their worksites for excavation hazards and identify some controls

Recommended Time: 15 minutes

Page from Participant Booklet: 45 (for Option 1)
13 or your own customized job hazard analysis form
(for Option 2)

Recommended Approach for Teaching

Cues	What to Do or Say
Facilitator Note	<ul style="list-style-type: none">■ You have two options for facilitating this tailgate session.<ul style="list-style-type: none">– Use page 45 and have employees assess the potential hazards for all the processes listed on the page.<u>OR</u>– Use your actual worksite and have employees assess the potential excavation hazards at that worksite.
Option 1	<ul style="list-style-type: none">■ Give Page 45 to employees.■ Tell them that this page lists typical activities that occur in or around an excavation.■ Ask them to identify the processes they most frequently find themselves performing.■ For each item on Page 45 that applies to your organization, ask employees to:<ul style="list-style-type: none">– Identify the potential excavation hazards.– Identify some controls that can protect workers from excavation injuries.

- Following are some possible hazards and controls for the activities on this page.
- **Item 1**—Digging a site for a wind turbine
 - **Hazard:** Possible cave-in
 - **Control:** Make sure soil is tested
 - **Control:** Place the spoils back the appropriate distance
 - **Hazard:** Possibility of hitting underground electricity
 - **Control:** Check underground power lines before working
- **Item 2**—Performing foundation work inside of a trench
 - **Hazard:** Possible cave in
 - **Control:** Make sure trench is properly supported
 - **Hazard:** Potential to be struck by concrete truck
 - **Control:** Have a worker direct truck traffic away from workers
 - **Control:** Maintain worker awareness of truck
- **Item 3**—Installing rebar in the excavation cavity
 - **Hazard:** Possible cave-in
 - **Control:** Ensure that rebar work doesn't disturb structural integrity of the trench
- **Item 4**—Entering or exiting an excavated site
 - **Hazard:** Possible fall
 - **Control:** Provide a ladder or properly sloped entry/exit
- **Item 5**—Transferring equipment and materials to and from trench
 - **Hazard:** Truck too close to edge could fall in
 - **Control:** Maintain and mark boundaries around the trench
 - **Hazard:** Weight of truck could cause cave-in
 - **Control:** In marking boundaries, make sure permissible zone can handle truck weight

- **Item 6**—Walking on a rebar surface in the trench
 - **Hazard:** Can trip or stumble on rebar
 - **Control:** Install rebar to accommodate the size of a foot
 - **Control:** Place a smooth walkway over the rebar for workers to use
- **Item 7**—Crossing over an excavated site on a walkway
 - **Hazard:** Fall hazard
 - **Control:** Maintain guardrails on the walkway
 - **Hazard:** Dropping items from overhead
 - **Control:** Wear hard hats
 - **Control:** Avoid working under the walkway
- **Item 8**—Walking near the edge of an excavation
 - **Hazard:** Fall hazard
 - **Control:** Establish boundaries around the excavation
- **Item 9**—Operating a vehicle around an excavated site
 - **Hazard:** Truck too close to edge could fall in
 - **Control:** Maintain and mark boundaries around the trench
 - **Hazard:** Weight of truck could cause cave-in
 - **Control:** In marking boundaries, make sure permissible zone can handle truck weight
- **Item 10**—Working in an excavated area during a storm
 - **Hazard:** Flash flooding into the trench
 - **Control:** Evacuate the trench immediately
 - **Hazard:** Soil made unstable by storm could cave-in
 - **Control:** Test soil before re-entering the trench

Option 2

- Following are some other key points to discuss.
 - Even if your business isn't doing the actual excavation, it can still be held liable for the negligence of a contractor.
 - It is important to negotiate safety criteria into the contract
 - It is also important to monitor the work of the contractor to ensure they are working according to contract.
 - A company should not hesitate to ask a contractor to redo work that does meet safety standards.
- Give either Page 13 or your company's own job hazard analysis form to employees.
- Tell them that they're going to be performing a job hazard analysis for excavation hazards on the site where they will be working today.
- Have employees identify the tasks they will be performing. For each task, ask them to do the following.
 - Identify the potential excavation hazards.
 - Identify some controls that can protect workers from these hazards.

Both Option 1 and Option 2

- Once employees have identified some controls, differentiate between the controls that you are already using at the worksite and any new controls that might be worth acquiring.
- Do this by asking the following questions, then listening to what employees say:
 - Do you feel that the controls we are currently using are keeping us as safe from excavation injuries as possible?
 - If we wanted to take this worksite to the next level of excavation safety, what could we do?
 - Is there anything else we should be doing to keep this site as safe as possible from excavation injuries?

Additional Steps You Can Take

Consider investing in some of the excavation controls that are identified in this tailgate session.

TAILGATE SESSION 19

BEST PRACTICES FOR EXCAVATION SAFETY

Purpose of Session

To introduce employees to some of the best practices for preventing excavation injuries that are derived from the OSHA regulations

Recommended Time: 25 minutes (5 minutes pre-tailgate, and 20 minutes during tailgate)

Pages from Participant Booklet: 46-47

Recommended Approach for Teaching

Cues	What to Do or Say
Facilitator Note	
Before the Tailgate Session	
Pages 46 through 47	<ul style="list-style-type: none">■ This tailgate will work best if you ask your employees to fill out the assessment before the tailgate meeting, then have them come to the meeting prepared to discuss it.■ Give employees Pages 46 through 47. Tell them that you want them to do an assessment of practices in the business that will help you determine where excavation safety practices can be improved.■ Tell them that the items on these three pages are derived from OSHA regulations related to excavations.■ It is a list of practices that, if done consistently, can reduce the risk of excavation-related injuries at their worksites.■ Ask them to go through the list and rate how they feel the company does on each of these practices.■ Tell them to come to the tailgate session prepared to discuss the assessment.

At the Tailgate Session

- Thank employees for completing the best practices assessment for excavation hazards.
- Start by asking employees to identify areas that they rated with a 3. These are the practices you do well and employees should be congratulated for them.
- Then ask employees to identify the practices they feel could be done more consistently (items rated with a 2).
- Listen carefully as employees share this information, and ask them for ideas on how the company can improve in these areas.
- Finally, ask employees to identify one or two areas where they think excavation safety practices could be improved (items rated with a 1).
- Get their ideas for how to improve.
- After employees have shared their ideas, thank them.
- Encourage them to implement ideas for improvement that can be done right away (adopting new procedures, improving a practice).
- Make a commitment to them to invest in and implement some of the longer term recommendations they have shared.
- Close the discussion by encouraging employees to maintain excavations that are as clean and safe as these are.

Additional Steps You Can Take

Consider investing in and implementing some of the best practices ideas employees have shared.

TAILGATE SESSION 20 PROTECTION SYSTEMS

Purpose of Session

To introduce employees to important specifications for protection systems

Recommended Time: 10 minutes

Pages from Participant Booklet: 48

Recommended Approach for Teaching

Cues	What to Do or Say
Facilitator Note	<ul style="list-style-type: none">■ Use this tailgate if you are trying to give your employees knowledge relating to the protection system a contractor is building at your wind site.
Pages 48	<ul style="list-style-type: none">■ Give employees Page 48. Tell them that OSHA requirements for protection systems are designed to help prevent cave-ins at the excavation site.■ Although they won't be working on the excavation themselves, it is important to know what the specifications are so that they can note any irregularities and report them to management.■ Review the three factors that are important to consider when determining which type of protection system to build.<ul style="list-style-type: none">– It is important to determine the type of soil that exists where your wind turbine will be erected.– A key question to ask is, "Are we creating a hole that can be sustained by the soil?"– The competent person in the excavation company that you hire should perform a soil test.■ Use the diagrams on Page 48 as you explain a simple slope protection system and a single bench protection system.■ Answer questions as employees have them.

TAILGATE SESSION 21 TEST YOUR KNOWLEDGE OF STRUCK-BY HAZARDS

Purpose of Session

To introduce employees to some facts about struck-by hazards

Recommended Time: 10 minutes

Page from Participant Booklet: 56

Recommended Approach for Teaching

Cues	What to Do or Say
Page 56	<ul style="list-style-type: none">■ Introduce employees to their final knowledge challenge. This one will test their knowledge of struck-by hazards.■ Distribute Page 56 to employees along with pencils if employees need them.■ Review the questions one at a time by doing the following for each question:<ul style="list-style-type: none">– Read the question.– Ask employees to stand in one of four separate locations depending on their answer (example—people who answer A stand to your left, B in front of you and slightly left, C in front of you and slightly right, and D to your right).– Give the correct answer and the explanation.– Congratulate the group who got the correct answer.

- Following are the answers.
- **Question 1:** Correct answer is C.
- Point out that even though all of the items on this quiz question are factors in struck-by accidents, getting hit by heavy equipment is the most common.
- Note: the source for this quiz question is <http://www.osha.gov/SLTC/etools/construction/struckby/mainpage.html>.
- **Question 2:** Correct answer is D.
- According to OSHA, getting struck by heavy equipment, such as trucks or cranes, is the cause of this extremely high percentage of fatalities.
- Note: the source for this quiz question is <http://www.osha.gov/SLTC/etools/construction/struckby/mainpage.html>.
- **Question 3:** The correct answer is B.
- OSHA 1926.1428 provides the qualifications for signaling crane movements.
- **Question 4:** Correct answer is D.
- OSHA 1926.602(a)(9) describes what can be done to prevent worker run-over accidents.
- Thank employees for participating in this quiz.

Additional Steps You Can Take

To thank employees for participating in this tailgate, bring donuts for everyone to enjoy while they are participating.

TAILGATE SESSION 22

WORKSITE ANALYSIS FOR STRUCK-BY HAZARDS

Purpose of Session

To get employees to assess their worksites for struck-by hazards and identify some controls

Recommended Time: 15 minutes

Page from Participant Booklet: 57 (for Option 1)
13 or your own customized job hazard analysis form
(for Option 2)

Recommended Approach for Teaching

Cues	What to Do or Say
Facilitator Note	<ul style="list-style-type: none">■ You have two options for facilitating this tailgate session.<ul style="list-style-type: none">– Use page 57 and have employees assess the potential hazards for all the processes listed on the page.<u>OR</u>– Use your actual worksite and have employees assess the potential struck-by hazards at that worksite.
Option 1	<ul style="list-style-type: none">■ Give Page 57 to employees.■ Tell them that this page lists typical activities that may have struck-by hazards inherent in them.■ Ask them to identify the processes they most frequently find themselves performing.■ For each item on Page 57 that applies to your organization, ask employees to:<ul style="list-style-type: none">– Identify the potential struck-by hazards.– Identify some controls that can protect workers from struck-by injuries.

- Following are some answers you might get.
- **Item 1**—Movement of pedestrians and vehicles in the same area
 - **Hazard:** Person could get hit by vehicle
 - **Control:** Establish pedestrian zones
 - **Hazard:** Two vehicles could collide
 - **Control:** Have an individual on the ground directing traffic.
- **Item 2**—Loading and unloading of vehicles
 - **Hazard:** Possible item falling off of truck
 - **Control:** Make sure items on truck are firmly secured.
- **Item 3**—Moving and staging of large pieces of equipment
 - **Hazard:** Person could get in way of equipment
 - **Control:** Be alert to equipment movement
 - **Control:** Wear a hard hat at all times
- **Item 4**—Mechanical assembly of large components
 - **Hazard:** Pinch points
 - **Control:** Keep hands far away from equipment pieces as they are moving
 - **Hazard:** Potential for dropped tools
 - **Control:** If working above others, secure tools to a work belt or work on a platform with guards.
- **Item 5**—Overhead lifting of large components
 - **Hazard:** Potential for equipment to break free
 - **Control:** Avoid standing or working directly under the load
 - **Hazard:** Potential for equipment to swing around and hit a worker
 - **Control:** Use secondary crane or other piece of equipment to secure the piece from moving at random.

Option 2

- **Item 6**—Guiding suspended pieces of equipment into place
 - **Hazard:** Potential for equipment to break free
 - **Control:** Avoid standing or working directly under the load
 - **Hazard:** Potential for equipment to swing around and hit a worker
 - **Control:** Use secondary crane or other piece of equipment to secure the piece from moving drastically
- **Item 7**—Falling objects from overhead
 - **Hazard:** Worker might drop tool
 - **Control:** Avoid working directly under someone who is working at height
- **Item 8**—Crane, derrick, forklift, skid loader or hoist operation
 - **Hazard:** Possible tipover
 - **Control:** Avoid overloading or improperly loading equipment
 - **Hazard:** Item could fall off of equipment
 - **Control:** Properly load and secure everything to the equipment.
- **Item 9**—Locking out of blades before maintenance work begins
 - **Hazard:** Even though blade is shut down, it could be moved by a wind gust and knock a worker off balance.
 - **Control:** Wear a hard hat. Treat a locked-out blade as you would any other large piece of equipment that has the potential to move.
- Give either Page 13 or your company’s own job hazard analysis form to employees.
- Tell them that they’re going to be performing a job hazard analysis for struck-by hazards on the site where they will be working today.

**Both Option 1 and
Option 2**

- Have employees identify the tasks they will be performing. For each task, ask them to do the following.
 - Identify the potential struck-by hazards.
 - Identify some controls that can protect workers from these hazards.
- Once employees have identified some controls, differentiate between the controls that you are already using at the worksite and any new controls that might be worth acquiring.
- Do this by asking the following questions, then listening to what employees say:
 - Do you feel that the controls we are currently using are keeping us as safe from struck-by injuries as possible?
 - If we wanted to take this worksite to the next level of struck-by safety, what could we do?
 - Is there anything else we should be doing to keep this site as safe as possible from struck-by injuries?

Additional Steps You Can Take

Consider investing in some of the struck-by controls that are identified in this tailgate session.

TAILGATE SESSION 23 BEST PRACTICES FOR STRUCK-BY SAFETY

Purpose of Session

To introduce employees to some of the best practices for preventing struck-by injuries. These practices are derived from the OSHA regulations.

Recommended Time: 25 minutes (5 minutes pre-tailgate, and 20 minutes during tailgate)

Pages from Participant Booklet: 61-62

Recommended Approach for Teaching

Cues	What to Do or Say
Facilitator Note	<ul style="list-style-type: none">■ This tailgate will work best if you ask your employees to fill out the assessment before the tailgate meeting, then have them come to the meeting prepared to discuss it.
Before the Tailgate Session	
Pages 61 and 62	<ul style="list-style-type: none">■ Give employees Pages 61 and 62. Tell them you want them to do an assessment of practices in the business that will help you determine where struck-by safety practices can be improved.■ Tell them that the items on these three pages are derived from OSHA regulations related to excavations.■ It is a list of practices that, if done consistently, can reduce the risk of struck-by injuries at their worksites.■ Ask them to go through the list and rate how they feel the company does on each of these practices.■ Tell them to come to the tailgate session prepared to discuss the assessment.

At the Tailgate Session

- Thank employees for completing the best practices assessment for struck-by hazards.
- Start by asking employees to identify areas that they rated with a 3. These are the practices you do well and employees should be congratulated for them.
- Then ask employees to identify the practices they feel could be done more consistently (items rated with a 2).
- Listen carefully as employees share this information, and ask them for ideas on how the company can improve in these areas.
- Finally, ask employees to identify one or two areas where they think safety practices could be improved (items rated with a 1).
- Get their ideas for how to improve.
- After employees have shared their ideas, thank them.
- Encourage them to implement ideas for improvement that can be done right away (adopting new procedures, improving a practice).
- Make a commitment to them to invest in and implement some of the longer term recommendations they have shared.

Additional Steps You Can Take

Consider investing in and implementing some of the best practices ideas employees have shared.

TAILGATE SESSION 24

USE OF HAND SIGNALS TO PREVENT STRUCK-BY INJURIES

Purpose of Session

To introduce employees to the important hand signals they should be using to communicate with each other when they are operating equipment

Recommended Time: 15 minutes

Pages from Participant Booklet: 63-64

OR

A handout of your company's own hand signals

Recommended Approach for Teaching

Cues	What to Do or Say
Pages 63 and 64 <u>OR</u> Your company's own list of hand signals	<ul style="list-style-type: none">■ Hand out Pages 63 and 64, or your company's own list of hand signals. Tell employees that you are now going to review the hand signals they should use when they are operating or working around large equipment.■ If you are using Pages 63 and 64, tell them that these drawings are from OSHA regulations for crane and derrick safety.■ If you are using your company's own hand signals, provide some background regarding how they were developed.■ Select two or three signals and do the following.<ul style="list-style-type: none">– Review the most important signals that they should all know.– Review the most important signals they will be using at the worksite today.– Ask employees to demonstrate a variety of hand signals without looking at the handout.■ Close by emphasizing the important of using hand signals, especially when a site is busy with running equipment and workers on the ground.

TAILGATE SESSION 25

RECOGNIZING AND CONTROLLING HAZARDS FROM EXPOSED ENVIRONMENTS

Purpose of Session

The purpose of this session is to examine the hazards related to working in an exposed environment. Employees will examine factors that can affect the body's natural ability to balance its temperature. They will learn how to recognize heat and cold stress, and they'll identify methods for protecting themselves in extreme weather conditions.

Recommended Time: 20 minutes

Pages from Participant Booklet: 69-73

Recommendation: Facilitate this session every time the weather forecast shows there will be extreme conditions in the area. Focus on the weather conditions that apply at the time. Also, focus on insect and plant hazards indigenous to the area.

Recommended Approach for Teaching

Cues	What to Do or Say
Facilitator Note	<ul style="list-style-type: none">■ Spend about 5 minutes each on Pages 69-71, and another 5 minutes on Pages 72-73.
Pages 69 through 73	<ul style="list-style-type: none">■ Hand out Pages 69 through 73 to employees.
Page 69	<ul style="list-style-type: none">■ Refer employees to Page 69. Introduce thermal stress by saying it occurs when a person's environment is either extremely hot or extremely cold:<ul style="list-style-type: none">– A person can comfortably operate within a few degrees of core body temperature.– However, once temperatures become extreme in either direction, the body begins to react.– Note: If anyone asks about the core body temperature being 99.6° rather than 98.6°, explain that thermometers are used in the outer extremities of the body, where the temperature has cooled down. In its core, body temperature is a degree higher than in the mouth.

- Refer employees to the chart at the bottom of Page 69 and explain that there are several factors that can affect a body's thermal balance.
- Review the factors that can affect a body's thermal balance by discussing the following:
 - What are some of the typical weather extremes we deal with at our work sites?
 - How effective are we at adjusting our work demands to the climatic conditions?
 - Do you find that some of the personal factors affect your ability to function in extreme weather conditions?
- Refer to Page 70. Tell employees that it is important to recognize when they or their co-workers are showing signs of either heat or cold stress.
- Ask employees to identify the signs of heat and cold stress. Following are some answers you can expect.
- Heat stress
 - Headache
 - Dizziness
 - Weakness and fainting
 - Wet skin
 - Irritability
 - Confusion
 - Thirst
 - Nausea and vomiting
- Cold stress
 - Shivering
 - Fatigue
 - Loss of coordination
 - Confusion and disorientation
 - Blue skin

- Dilated pupils
- Slowed pulse and breathing
- Loss of consciousness
- Close the discussion by reminding employees of the importance of recognizing these signs and acting quickly.
- Refer employees to Page 71. Tell them when they are working outdoors, heat and cold aren't the only things they have to be concerned about.
- This page lists a variety of outdoor hazards.
- Have employees look at this list and identify those things that they commonly encounter at their worksites.
- Get a few responses, then ask employees how to control these hazards.
- Following is a list of some of the responses you might get.
 - **Sunburn:** Wear sun block, cover up arms, legs, torso, wear a hat
 - **Tornados:** Listen to and heed forecasts, have a safe shelter, evacuate upon warnings
 - **Lightning:** Listen to and heed forecasts, have a safe shelter, evacuate upon first sign of lightening
 - **Windstorms:** Know your maximum limit before evacuating, secure tools and equipment that could get blown over
 - **Hurricanes:** Listen to and heed warnings, evacuate before situation becomes dire
 - **Bees:** Know if you are allergic, avoid bright colored clothing, avoid scented deodorants, hair sprays, colognes
 - **Snakes:** Be aware of your environment, know how to treat a snake bite, look before reaching into boxes or enclosures or before stepping into an area where you can't see the ground
 - **Spiders:** Know if you are allergic, be aware of your environment, know how to treat spider bites

Pages 72 and 73

- **Ticks:** Know your environment, avoid tall grasses and shrubs, wear clothing to cover as much of body as possible, if you are in tall grasses and shrubs, check yourself closely
 - **Mosquitoes:** Wear insect repellent, avoid bright colored clothing, avoid scented deodorants, hair sprays, colognes, know how to treat mosquito bites
 - **Scorpions:** Know if you are allergic, look before reaching into boxes or enclosures, know how to treat a bite
 - **Poisonous plants:** Be able to recognize common poisonous plants, be cautious when working in an area known to have these plants, know how to treat exposure to these plants
-
- Refer to Pages 72 and 73. Tell employees that this assessment is derived from OSHA recommendations for protecting employees from heat and cold.
 - It is a list of practices that can reduce the risk of employees getting overcome by extreme weather conditions.
 - Ask employees to review the list briefly, then discuss the assessment by doing the following:
 - Ask which items they feel they/their worksite does particularly well.
 - Ask where they feel improvements can be made.
 - Have employees identify one or two items from the assessment that they would like to improve.
 - Tell employees that one important best practice is to have some emergency procedures set up for bad weather.
 - Ask employees the following questions.
 - What are our procedures in a severe storm?
 - Where do you go?
 - How do we account for all of our employees?
 - Close this activity by encouraging employees to work on improving some of the best practice items they have selected.

Additional Steps You Can Take

Consider investing in and implementing some of the best practices ideas employees have shared.

TAILGATE SESSION 26 STAYING ON TOP OF OSHA REGULATIONS

Purpose of Session

To introduce employees to the OSHA regulations related to the jobs they perform at their worksites

Recommended Time: 10-30 minutes depending on the complexity of the regulations

Recommended Timing: Facilitate this tailgate every time you want to introduce employees to one or more OSHA regulations. Plan to introduce the regulations in a just-in-time manner. For example, if employees will be working at heights, introduce them to the regulations related to working at heights. You can find references to the related regulations in the related module in the Participant Booklet.

Resources to Use: OSHA 29 CFR 1926

Pages from Participant Booklet:

- Page 29 if you will be covering regulations related to working at heights.
- Page 42 if you will be covering regulations related to working around electricity.
- Page 54 if you will be covering regulations related to excavations.
- Page 67 if you will be covering regulations related to being struck by something.

Preparing for this Session: You will need to do some preparation for these sessions. Once you determine which regulations you will cover in the tailgate, go to the appropriate section of OSHA 29 CFR 1926 and read the related regulations. Make a short list of those regulations that apply to your worksite at this time. Pass this list out during the tailgate.

Recommended Approach for Teaching

Cues	What to Do or Say
Handout	<ul style="list-style-type: none">■ Give employees the handout you prepared on this topic.■ Review the major OSHA 29 CFR 1926 regulations related to the topic you will be reviewing.■ Ask employees to relate each regulation to what they will be doing on the job today.

