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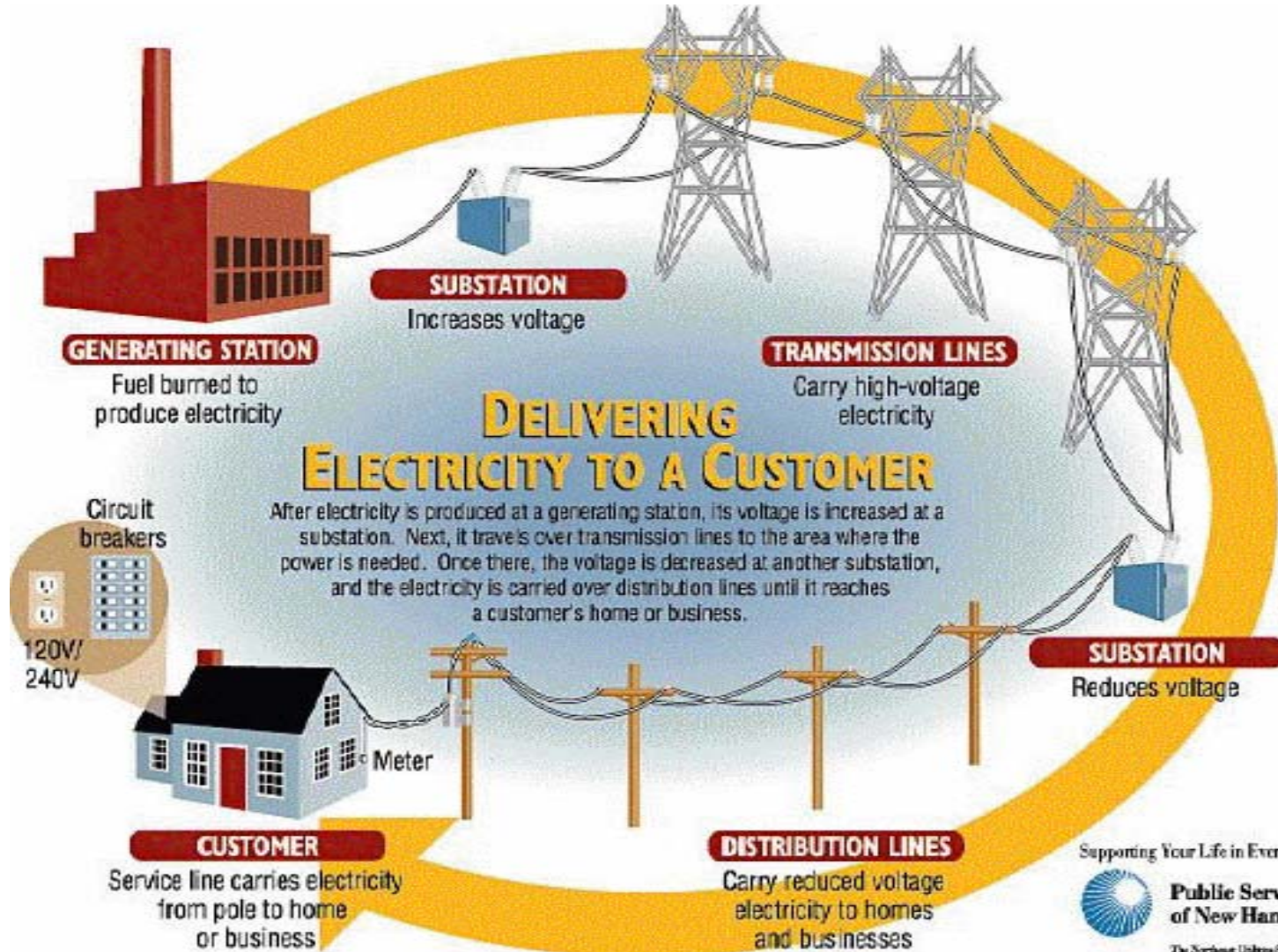
# **Safety & Environmental Orientation Program for Northeast Utilities Transmission Contractors**

**Northeast Utilities Safety  
12/10**



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# How Electric Utilities Work



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# Plan the Work & Work the Plan!





# Agenda

- Introduction
- NU Contractor Work Rules
- Human Performance
- Main Safety Hazards (**GEM'S**)
  - **G**avity
  - **E**lectrical
  - **M**echanical



# Introduction

- All contractors and their employees are responsible for ensuring safety and environmental compliance including adherence to the following:
  - State, federal, and local safety, health, and environmental requirements that are in effect during the work
  - **Northeast Utilities Contractor Work Rules and any Addendums (effective 11/10)**
  - Guidance, work instructions & site-specific rules



## Introduction (cont.)

- Contractors are required to ensure their employees, subcontractors, and agents are aware of:
  - The four tenets of the NU environmental Policy (maintaining Compliance, demonstrating Leadership, ensuring Accountability and practicing Stewardship)
  - The scope of their job and how it impacts the environment
  - Who to call in case of emergencies





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# NU Contractor Work Rules AND Work Rule Addendums

<http://www.transmission-nu.com/contractors/rules.asp>



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[Work Rules, Policies,  
Procedures](#)

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## Work Rules, Policies, Procedures

- [Contractor Work Rules](#)  (51KB)
- [Transmission Work Rule Addendum](#)  (94KB)
- [Contractor Work Rule Sign Off \(Appendix F\)](#)  (68KB)
- [Personal Protective Grounding \(TD 703\)](#)  (428KB)
- [Pre-job Briefing Form / Job Hazard Assessment](#)  (35KB)
- [SF6 Gas Handling \(TD 710\)](#)  (143KB)
  
- [Construction and Maintenance Environmental Requirements for CT](#)  (98KB)
- [Construction and Maintenance Environmental Requirements for MA](#)  (98KB)
- [Construction and Maintenance Environmental Requirements for NH](#)  (97KB)



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# NU Contractor Work Rules

- Key General Safety Rules
  - Emergency Response – Prior to the start of work, contractors must coordinate emergency response with NU Owners Representative
  - Pre-job Safety and Environmental Briefings – Contractors must conduct pre-job safety and environmental briefings with all workers that will be involved in the job at the start of each shift, when the scope of work changes, and before new work assignments.





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# NU Contractor Work Rules (cont.)

- Pre-job Safety Briefings: high risk contractors (civil, line, electrical, vegetation management, general construction, etc.):
  - must conduct documented pre-job safety and environmental discussions (commonly known as toolbox discussions, tailboard discussions, etc.) with all workers that will be involved in the job at the start of each shift, when the scope of work changes, and before new work assignments. All other contractors (low risk) shall perform a similar Pre-job safety and environmental briefing, but it need not be documented.



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# NU Contractor Work Rules (cont.)

- Training Records – Contractors shall have training records, licenses, and other such documentation for their employees that are pertinent to the work being performed either on-site or available within twenty-four hours and subject to review by NU.



# NU Contractor Work Rules (cont.)

## – Training:

- NU Safety & Environmental Orientation Review: Contractors shall provide a review of the NU Contractor Work Rules (and applicable addendums) to all personnel and all subcontractors prior to commencing work activities. Review shall be documented.
- OSHA 10 Hour Training (effective 3/31/11): All Vegetation Management, General Construction, Civil, Line and Electrical contractor supervisors with greater than 6 employees under their routine direct supervision shall have at a minimum a 10 hour OSHA training certificate.



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# NU Contractor Work Rules (cont.)

- Scaffolding – The contractor must:
  - Designate a competent person
  - Use 100% fall protection or restraint at all times during erection, maintenance, use and dismantling of the scaffold
  - Use 100% fall protection whenever the fall hazard is six (6) feet or greater
    - Exception: Competent person possesses documentation clearly describing why 100% fall protection or restraint is not feasible or creates greater hazards.



# NU Contractor Work Rules (cont.)

- Key Specific Safety and Health Rules
  - Trenching and Excavating – The contractor must:
    - Designate a competent person
    - Assume the soil is type C
    - Contact appropriate “Call Before You Dig or “Dig Safe”
    - Guard unattended trenches and excavations to prevent inadvertent falls



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# Focus on Excavation Safety







# NU Contractor Work Rules (cont.)

- Fall protection – The contractor must:
  - Use 100% fall protection whenever the fall hazard is four (4) feet or greater from structures that support overhead electrical lines
  - Use 100% fall protection whenever the fall hazard is six (6) feet or greater in other construction activities
  - Exception: Competent person possesses documentation clearly describing why 100% fall protection or restraint is not feasible or creates greater hazards.



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# NU Contractor Work Rules (cont.)

- Housekeeping – Contractors shall keep the site neat, clean, and free of debris, trash, and hazards
- OSHA Crane Standard (1926.1400):
  - Comply with all applicable sections of the new OSHA crane standard (effective 11/8/10):
    - Certification, signal person training, power line safety, inspections, safety devices, spotters, tag lines, ground conditions, work area protection and keeping workers clear of suspended loads, etc.



# NU Contractor Work Rules (cont.)

- Lock out/Tag out – Where work at NU facilities requires the use of a lock out/tag out system, the contractor:
  - Is required to coordinate lock out/tag out with the NU Owners Representative
  - May be required to comply with NU's lock out/tag out requirements`



# NU Contractor Work Rules (cont.)

- Confined Space Entry (including Enclosed Space Entry)
  - The contractor:
    - Will Consider ALL confined spaces as permit-required until:
      - Informed otherwise by NU or
      - The contractor conducts a written hazard assessment that documents otherwise
    - Will Coordinate all entries into confined spaces with:
      - The NU Owners Representative
      - The local facilities/building supervisor and
      - Other work groups



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# NU Contractor Work Rules (cont.)

- Personal Protective Equipment (PPE) – Contractors shall:
  - Comply with local NU PPE requirements for the location or the type of work and/or any additional requirements specified in Addendums our the contract.
  - Determine any additional PPE requirements



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# NU Contractor Work Rules (cont.)

- Fire Retardant Clothing – Wearing of fire retardant clothing is required for certain locations (i.e., substations) for performing certain electrical and gas activities.
  - Refer to the NU Owners Representative for specifics on FR clothing.





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# NU Contractor Work Rules (cont.)

- Electrical (Substation) Awareness – Electrical training appropriate to the work performed by contractors in substations is required by NU
- The intent of this training is to ensure persons understand the hazards of electricity and the actions they must take to prevent inadvertent contact
- This training is on-line at the NU Transmission Group external website



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# NU Contractor Work Rules (cont.)

- Reporting Injuries and Other Incidents (Near Misses) – Contractors are required to:
  - Report to the NU Owners Representative ALL injuries no matter how slight
  - Report to their personnel immediately; but not later than 24 hours of occurrence
  - Promptly investigate within 10 days all injuries to determine cause and corrective actions.



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# NU Contractor Work Rules (cont.)

- Key Specific Environmental Rules
  - Unplanned Releases to the Environment - The contractor is responsible for:
    - Immediately reporting unplanned releases to the NU Owners Representative and/or the designated representative
    - Containment, reporting and remediation of any release from contractors equipment
  - Permits, Licenses and certificates – The contractor shall comply with all permit, licenses, and certificate requirements and laws, regulations, ordinances, and conditions of local, state and federal agencies



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# Transmission Work Rule Addendum

- **Additional work rule requirements for any and all contractors working for the NU Transmission Group.**



# Supplemental Training

- The contractor shall provide the following training to their personnel and subcontractors as follows:
  - Safety & Environmental Orientation Program (all employees)
  - OSHA 10 hour training (Civil, Line and Electrical contractor supervisors with > 3 employees under their control)
  - Substation Access (employees accessing substations)
  - Human Performance (Contractor of Choice employees attend a NU provided human performance training session).
  - Environmental Best Management Practices (BMP) (employees working on R/Ws or construction sites that impact wetlands, endangered species or soil).



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# Transmission Work Rule Addendum

- ASTM F2413-05 (M I/75/C75/Mt75) EH Rated Safety (steel toe or composite) Footwear required for all electrical overhead and underground line work (maintenance, emergency, & construction) and substation work
- Requesting Clearances, Receiving Clearances & Switching – Individuals required to:
  - Satisfactorily complete Convex Operating Instructions # 6401 and # 6501 training
  - Satisfactory complete on the job verification process (see Transmission Work Rule Addendum for more detail)





# Transmission Work Rule Addendum (cont.)

- Grounding for Protection of Employees
  - Transmission Lines
    - Comply with OSHA equipotential grounding requirements and your own safety rules and procedures
  - Substations
    - Comply with NU procedure TD 703 – Temporary Protective Grounds for Personnel Protection in Substations
    - Check with NU owners representative for local requirements (i.e., Substations requiring two grounding cables per phase)



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# Transmission Work Rule Addendum (cont.)

- Handling & Use of Sulfur Hexafluoride Gas (SF<sub>6</sub>) – Contractors shall comply with NU procedure TD 710- Handling and use of Sulfur Hexafluoride (SF<sub>6</sub>) Gas
- Request for Safety Plan – When requested by NU, Contractors may be required to:
  - Submit a site specific job hazard analysis documenting
    - Major job steps
    - Major hazards associated with job steps
    - Barriers and controls to manage major hazards identified



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# Transmission Work Rule Addendum (cont.)

- Soil Management & Environmental Assessment
  - Excavations In Potentially Contaminated Soils –  
Where identified as contaminated or polluted by NU soil sampling:
    - Applicable workers shall have required OSHA training (i.e., 24 hour)
    - The Contractor shall coordinate all soil disturbing and handling activities with the NU Owners Representative



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# Transmission Work Rule Addendum (cont.)

- Soil and Erosion Control – Where contractors are performing civil construction work and/or work on transmission right-of-ways contractors:
  - Shall follow the Transmission Group's state specific Construction and Maintenance Environmental Requirements - Best Management Practices (BMP's)
  - Shall provide training for their employees on the BMP's



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# Transmission Work Rule Addendum (cont.)

- Environmental Assessments – When requested by NU, Contractors may be required to:
  - Complete Environmental Assessments for:
    - Working in Wetlands
    - Disposing of obsolete equipment
    - Other applicable capital construction projects



# Transmission Work Rule Addendum (cont.)

- Incident Investigation & Corrective Action – Contractors are required to:
  - Immediately inform the NU Owners Representative
  - Submit a detailed written report to the NU Owners Representative within 10 working days for all injuries/illnesses and other significant incidents
  - Upon request, present a review to management for all serious incidents (OSHA injuries and significant near misses) within 30 days
  - Complete and submit a Human Performance & Error Reduction Summary Sheet for safety near misses and system disturbance human errors





# Transmission Work Rule Addendum (cont.)

- **Safety Professional Oversight** - the following safety professional oversight will be required for all civil, line and electrical construction projects as follows:
  - between 20 - 40 workers for an extended period of time will require a part-time safety professional
  - > 40 workers for an extended period of time will require a full-time safety professional
- Includes all contracts awarded after 5/1/08. The assigned contractor safety professional shall submit weekly status reports to the NU Representative



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# Human Performance Expectations

- Safety First
- Follow **ALL** OSHA Requirements
- Follow NU Contractor Work Rules **AND** Transmission Work Rule Addendum
- Use Fundamental Error Elimination Tools **AT ALL TIMES**
- Pre-Job Briefs before **EVERY JOB**
- Flagging



# Main Safety Hazards (Gem's)

- **Gravity**

- Falling from height
- Falling objects (tools, materials, structures)
- Aerial device operation
- Dangerous trees

- **Electrical**

- Electrical contact
- Induced voltage (electromagnetic & electrostatic)
- Backfeed
- Flash potential
- Step & Touch potential

- **Mechanical**

- Equipment failure
- Conductor tension
- Loaded springs
- Moving parts
- Loads – hoisting/rigging
- Crane/derrick set-up
- Vehicle operation
- Work area protection



# Barriers

- Eliminate the Hazard
  - i.e., De-energize & ground electrical circuit  
(Lock out/Tag out)
- Reduce Energy to Safe Level
  - i.e., Wear personal protective equipment
- Use Physical Barriers
  - i.e., Install guardrail around excavation



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# Use Error Elimination Tools





# Error Traps & Error Elimination Tools

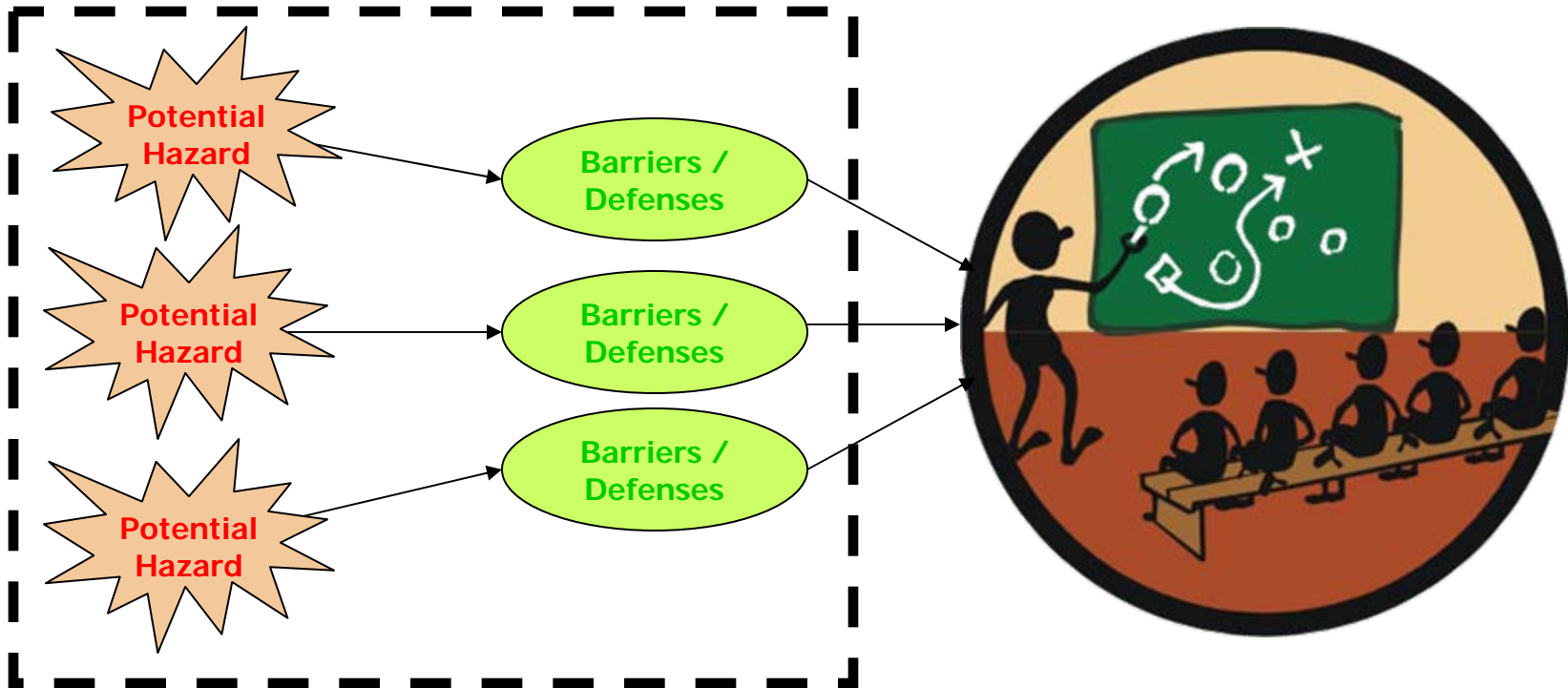
- Traps Present
  - Time pressure
  - Distraction/Interruptions
  - Multiple tasks
  - Overconfidence
  - Vague guidance
  - First shift/last shift
  - Peer pressure
  - Change/off normal
  - Physical environment
  - Mental stress
- Tools to Use **(ALL THE TIME)**
  - Questioning attitude
  - Effective communication
  - Task preview
  - Job site review
  - Procedure use
  - Self-Checking
  - STOP when unsure
  - Pre-job safety briefing
  - Flagging



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# Job Hazard Assessment

# Pre-Job Briefs





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# Questions

- Contact your NU Representative (eg: Construction Representative, etc.) or NU Safety if you have any questions.

**Thank-you and be safe!!**