First Responder
Utility Safety Awareness Training

MARCH 24th, 2021

5:30-7:00 PM

WELCOME TO ALL EMERGENCY FIRST RESPONDERS!

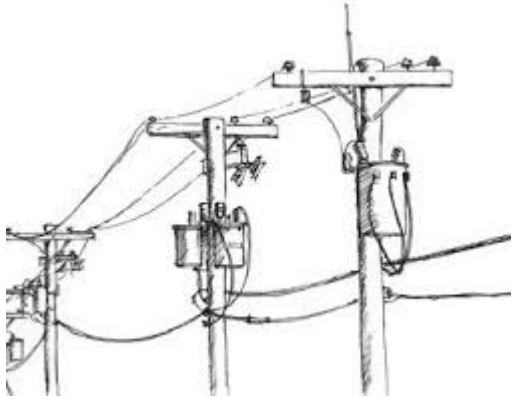
- Fire
- Rescue
- Law enforcement
- VT Agency of Transportation
- Dispatchers and First Responders

Welcome to Utility Safety Awareness

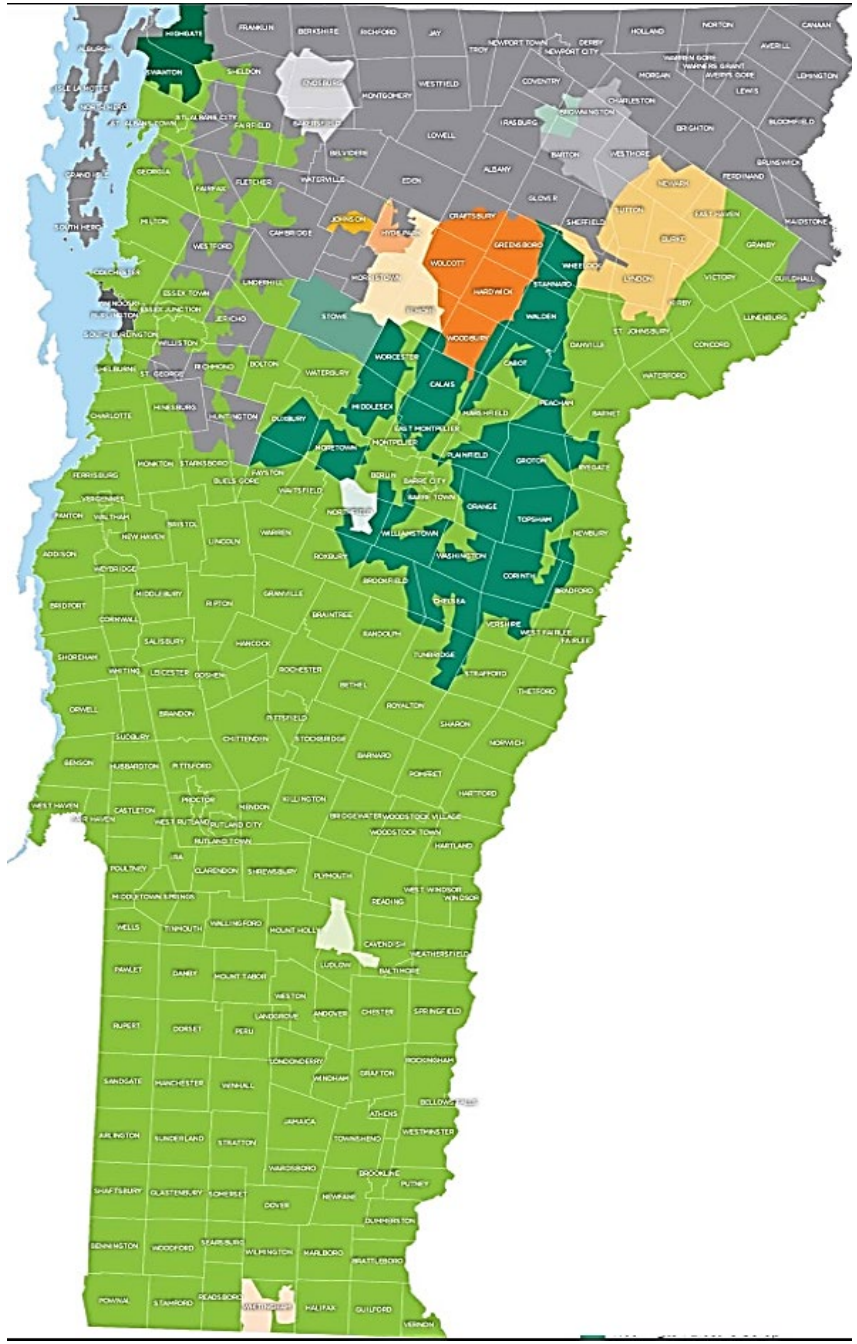
- Police, fire, rescue and volunteers are typically first on the scene in an emergency and face the greatest risk from electrical infrastructure contacts or natural gas explosions.
- Understanding the potential dangers and dealing with them correctly makes everyone safer.
- Training and communication are a critical component of a safe & efficient operation.
- We want to serve as a resource to you and the communities you serve.

This guidance is designed to supplement, not replace, your department's standard operating procedures (SOPs).

Vermont Electric Distribution Utilities



Find Your Power Company
https://www.velco.com/find-your-power-company



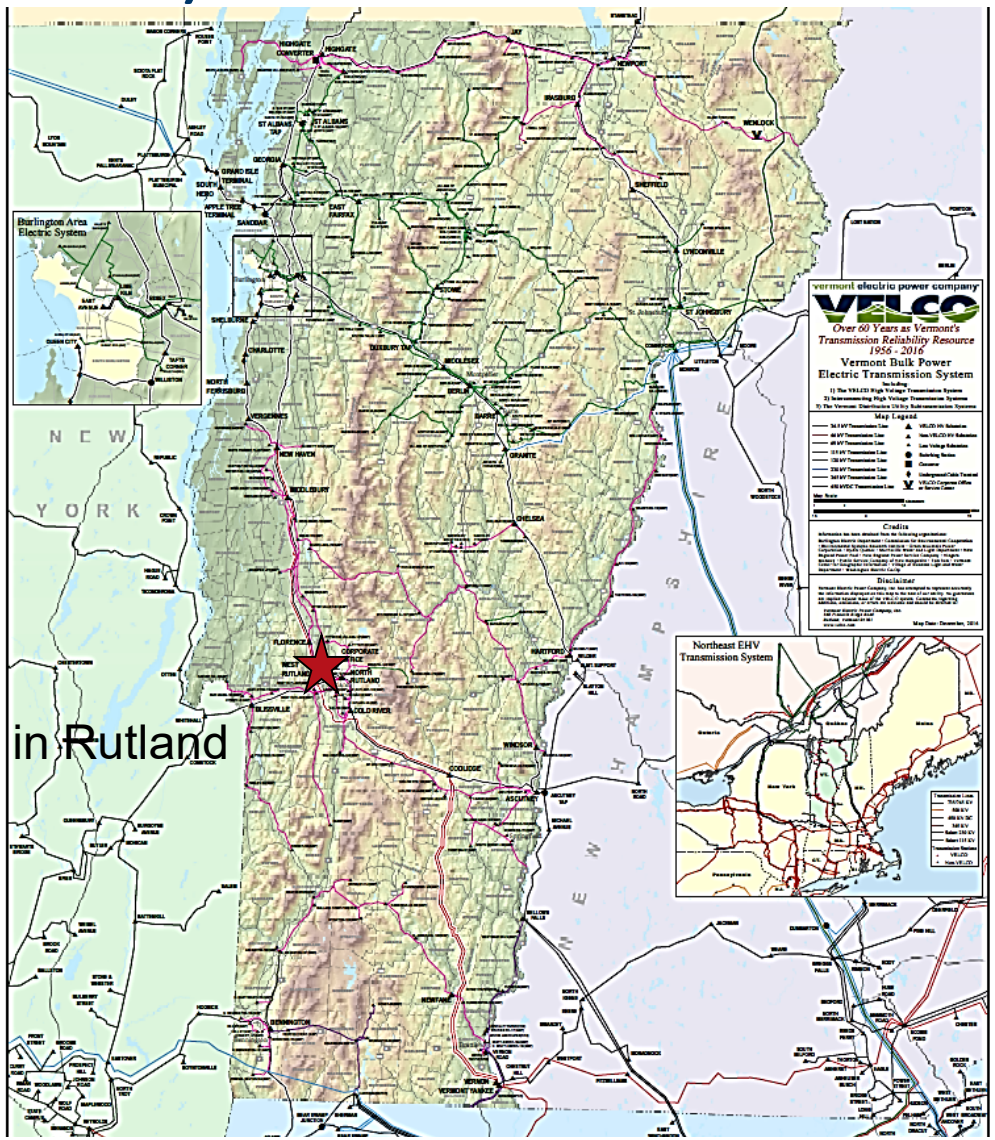
LEGEND

- Lake Champlain
- Green Mountain Power
- Burlington Electric Dept.
- Ludlow Electric Light Dept.
- Swanton Village Electric Dept.
- Vermont Electric Co-op
- Village of Barton
- Village of Enosburg Falls
- Village of Hardwick
- Village of Hyde Park
- Village of Jacksonville Electric Dept.
- Village of Johnson
- Village of Lyndonville Electric Dept.
- Village of Morrisville Water & Lt Dept.
- Village of Northfield
- Village of Orleans
- Village of Stowe Electric Dept.
- Washington Electric Co-op

Vermont Electric Power Company (VELCO)

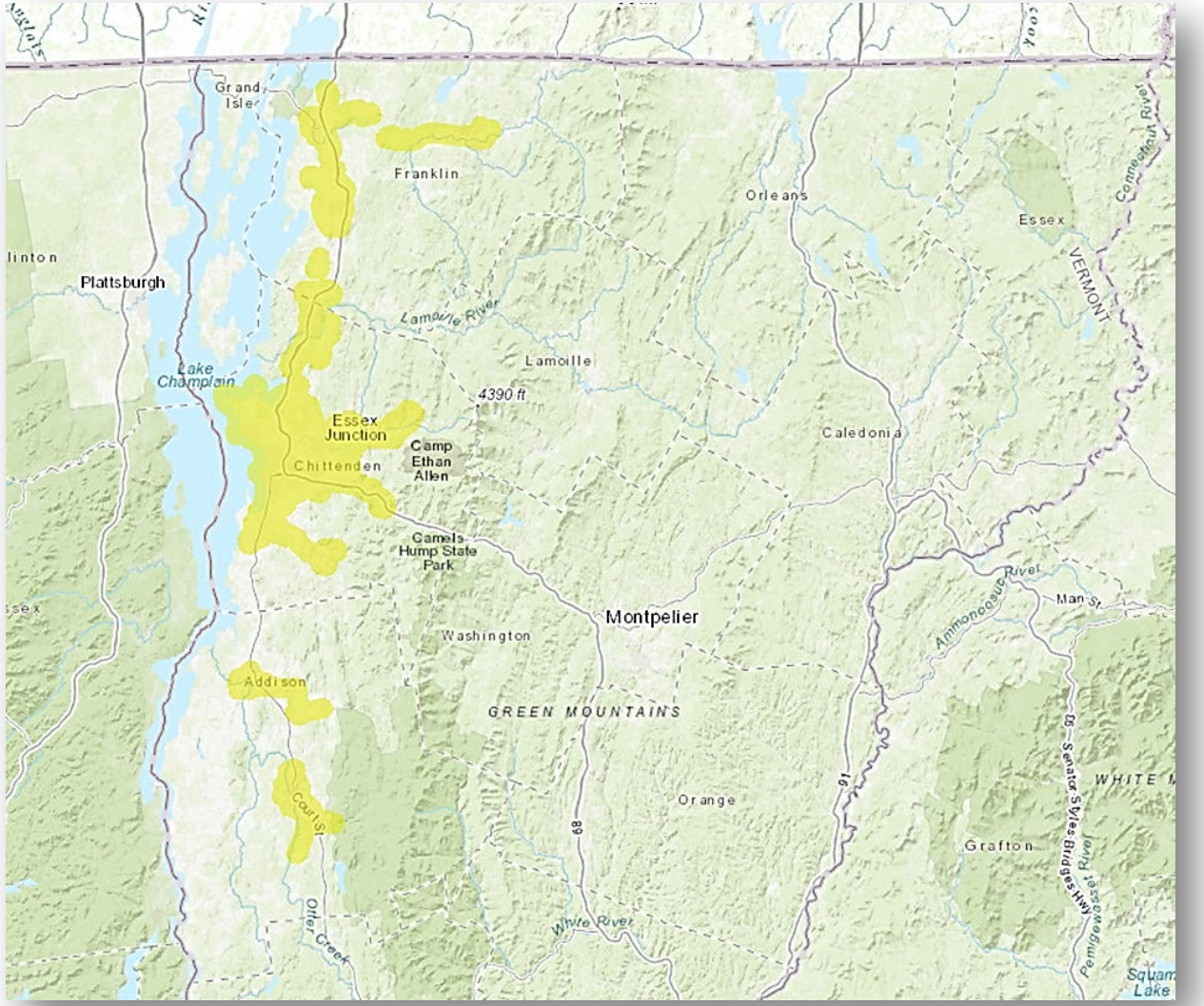
- Transmission only
- 738 miles of transmission lines
- 1,600 miles of fiber optic cable
- 55 substations
- 57 Radio sites
- And more than 13,000 acres of right-of-way in 196 town, villages and cities in Vermont

Headquarters in Rutland



Vermont Gas Systems, Inc. (VGS)

Service Area



- Serving Franklin, Chittenden and Addison Counties.
- Office located in South Burlington
- Business Phone: (802) 238-7200

Key Training Points

- Electrical Safety Basics
- Arrival at scene of utility emergency
- Step & touch potential
- Establish ICS and identification of authorized Utility Person In Charge
- Utility procedures - clearance & control, de-energize lines, test, ground, Tailboards
- Medical emergencies – DHART response
- Only utility personnel can pull meters or diconnect secondary wires
- Confined space rescue
- Batteries and Solar
- Tier II reports & hazardous material
- Security & Unlawful Activity

Electrical safety basics

- Electricity always seeks all paths to the ground. It will travel there through conductors, including the human body, water, trees and metal objects like ladders, poles and fences.
- Never touch or attempt to move fallen lines or objects contacting them.
- Even low-voltage electric shock can be fatal.
- Your standard protective gear DOES NOT insulate against electric shock.

Electrical safety basics

To keep yourself safe, you must stay out of electricity's path:

- Assume all power lines are energized and potentially dangerous.
- Avoid parking emergency vehicles under or near power lines.
- If your equipment contacts a power line:
  - The equipment should be considered energized
  - Stay put and warn others to stay away until utility personnel give the all clear
  - If you can do so safely, move the equipment away from the power line
  - If fire or other imminent danger forces you off the equipment, jump clear, land with your feet together, shuffle step away

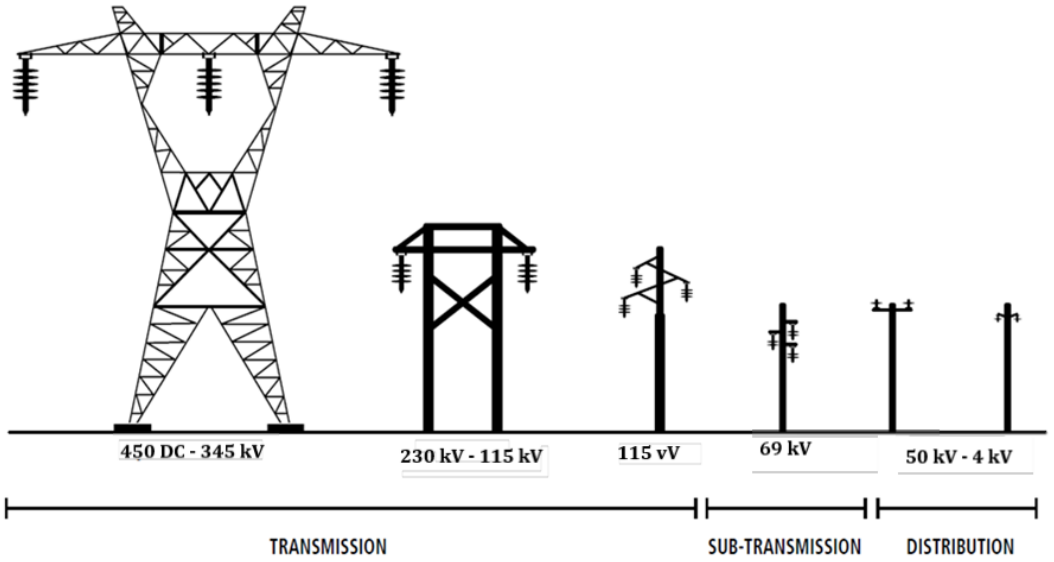
Electrical safety basics

Safe clearances during normal conditions

- Maintain AT LEAST 10 feet away from power lines of 50,000 volts or less (Distribution power lines).
- Higher voltage Transmission lines require greater clearances.

  115kV 15-foot clearance,

  230kV & 345kV & 450 DC require 20-foot clearance



Electrical safety basics

To keep yourself safe, you must stay out of electricity's path:

- Do not attempt to enter or contact vehicles that may be energized.
- Never cut service wires or remove electrical meters.
- Never approach down power lines or try to enter a substation.
- Never attempt to open or enter a manhole or vault until you are sure it has been de-energized and confined space practices are implemented.

Arrival at scene of utility emergency

A first responder's toughest job is standing by when people right in front of you are at great risk of harm. Unfortunately, car/pole accidents frequently present you with exactly this scenario – driver and passengers trapped in a crumpled vehicle draped with one or more electric power lines, some sparking with live electricity, others appearing harmless. Tendrils of smoke drift out from under the hood. Quick! It's time to act! What should you do?

Survey scene and make safe

Do not approach, touch or attempt to enter any vehicle that may be energized. Resist the temptation to try to extract passengers. You cannot help anyone if your become a victim. Use Situational Awareness.

Secure the area and have your dispatcher contact the utility. When utility personnel arrive on-site they will inform (though a Tailboard conference) when it is safe to approach.

Instruct the occupants to stay in the vehicle unless they are in imminent danger from fire or other hazards in which case they must jump clear with feet together and shuffle step away, do not run!

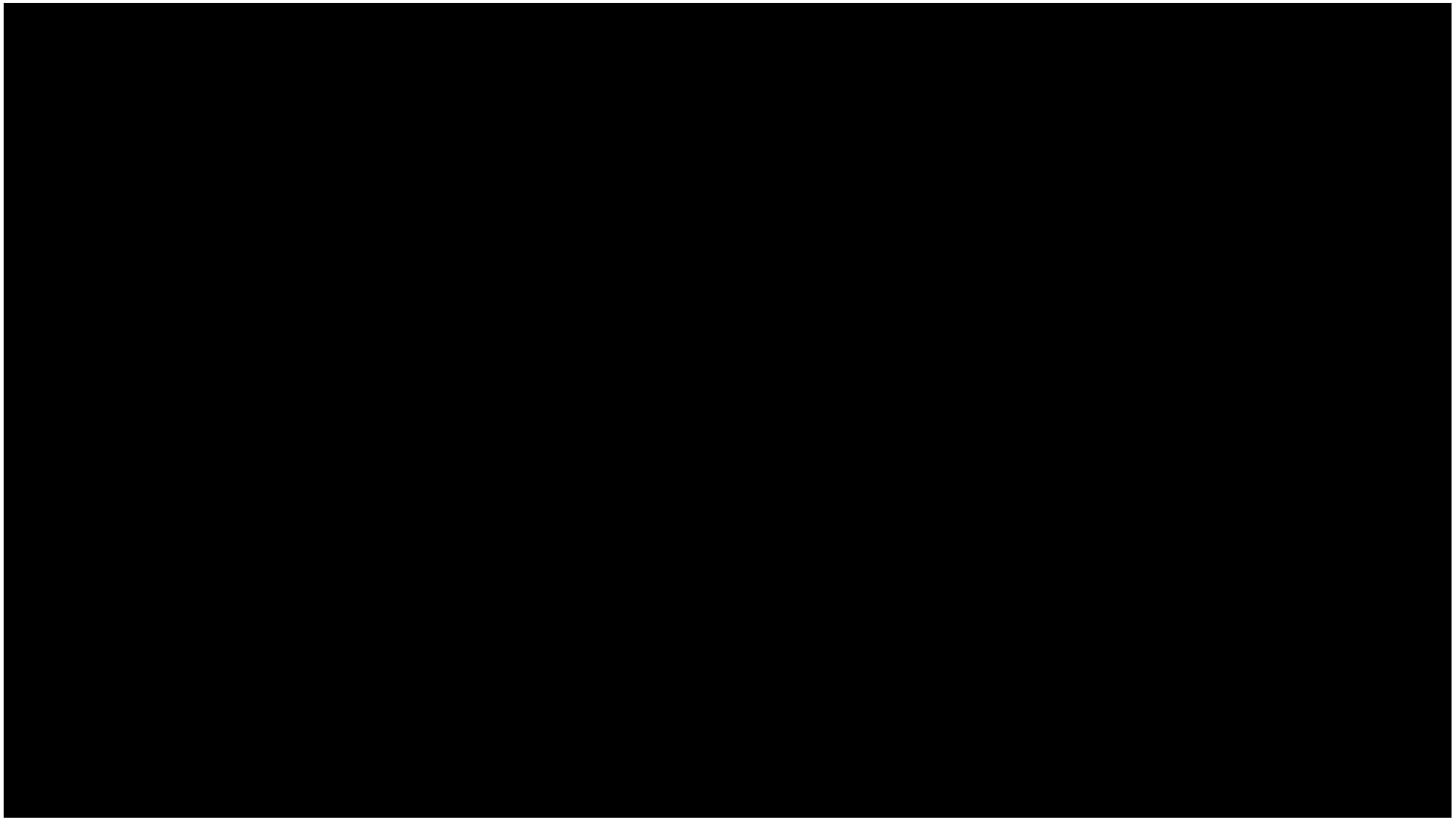
Emergencies with Natural Gas

Remain Alert for Multiple Hazards

- ❑ Downed power line fell on signpost which was driven along gas main resulting in gas leak and fire (electrical & gas hazards).
- ❑ Vermont Gas located in Chittenden, Franklin & Addison counties

Contact Dave Attig for natural gas response training dattig@vermontgas.com

Step & Touch Potential



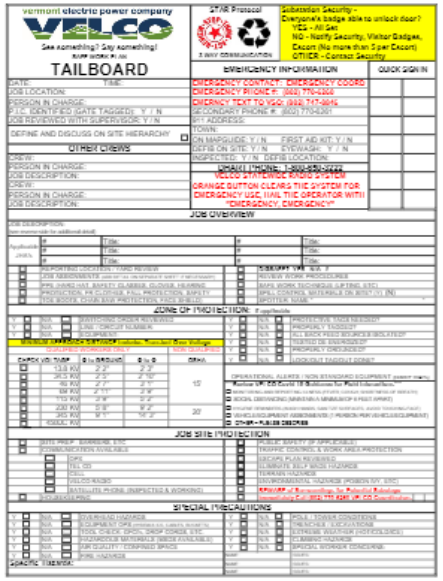
Establish ICS and identification of authorized Utility Person In Charge

- Designated on-site Incident Commander communicates with authorized Utility Person In Charge
- If you think you're in an unsafe place move further back as a precaution.
- The more distance between you and electrified equipment or lines, the safer you are.
- Never cut a fence or lock
- Never enter a Substation without being briefed and escorted by authorized Utility Personnel

Utility procedures

Standardized protocols for electrical utilities -

- Utility System operator issues clearance & control to authorized utility personnel
- Red Tag clearance issued, de-energize, test and ground
- Authorized Utility Person In Charge will brief the Incident Commander on the status of electrical equipment and other utility requirements though a documented safety briefing referred to as a Tailboard



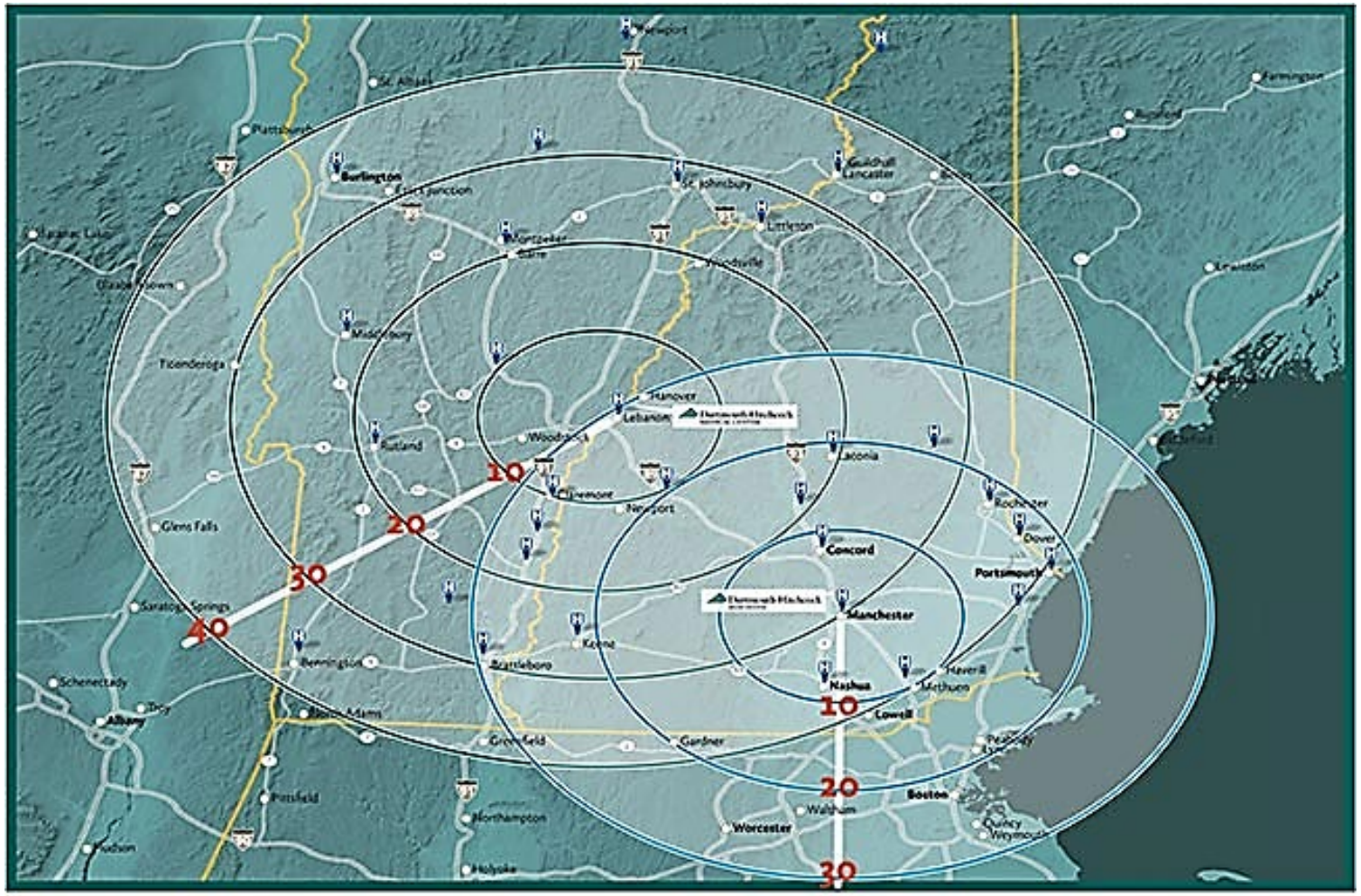
Medical Emergencies

Utility personnel receive training on basic first & CPR. Some have AEDs.

Coordination with DHART & First Responders for Life Threatening Injuries.

Utilities do not have radios with V TAC 4 frequency.

Below, radar image of helicopter response times from DHART bases.



Pulling Meters & Secondary Wires

- Only power company employees should ever attempt to pull the meter.
- It is only a measuring device and not a switch.
- It could short out at the base and possibly cause burns, eye damage, or even an explosion.

Substation Fires

- **Isolate the area** at least 300 feet in all directions.
- **Keep unauthorized** persons away.
- **Contact the Utility** and wait for their personnel to arrive.
- **Never attempt to enter** a substation without utility personnel present.
- **Protect area exposures** to prevent the fire from spreading.
- **Be alert to the risk of transformer explosions, smoke hazards and oil releases.** Stay upwind and consider initial downwind evacuation for at least 1,000 feet.

Internal Fire Suppression

- A select number of facilities are designed to extinguish fires inside the Control Houses (aluminum, concrete, or tin houses inside the substation yard) using FM200, Carbon Dioxide, Inergen, Ethylene Glycol/DI H2O, Halon 1211, or Coolant as a fire suppressant.
- The substation yards do not have fire suppressant systems.

Batteries & Solar

Batteries

- Home & Commercial applications
- Keep Distance
- Do Not Open
- Look for markings near meters or disconnects

Solar

- Treat as electric equipment

Tier II Reports and Hazardous Materials

- SARA Tier II Reports submitted annually in March.
  - Part of the Community Right to Know Act
  - Contains site specific information on hazardous materials
    - Quantity, largest container, etc.
  - VELCO's reports are sent to the State of VT, local fire depts. and LEPCs.
- Spill Prevention Control and Countermeasures (SPCC)
  - All VELCO substations with oil-filled equipment have containment,
  - Newer VELCO substations have active containment (typically with underground tanks) to catch any spilled oil from transformers.
  - If responding to a spill, divert away from catch basins, drainage ditches, streams/waterways, etc.

Hazardous Materials at Substations

- SF6 (Sulfur Hexafluoride) Gas Breakers
- Dielectric Fluid
  - Found in Transformers, and Oil-Filled Breakers
- Batteries
  - Most substation batteries are lead-acid.

SF6 Breaker

Batteries

Oil-Filled Breaker

Transformer

What is a Confined Space?

- Is large enough and configured that an employee can enter bodily and perform work;
- Has limited or restricted means of entry or exit;
- Is not designed for continuous human occupancy.

Examples of Confined Spaces:

- Tanks - Generation
- Utility Holes
- Vaults
- Furnaces
- Sewers
- Storage Bins
- Hoppers
- Pipes
- Pits
- Etc.

Confined Space Rescue for Power Utilities

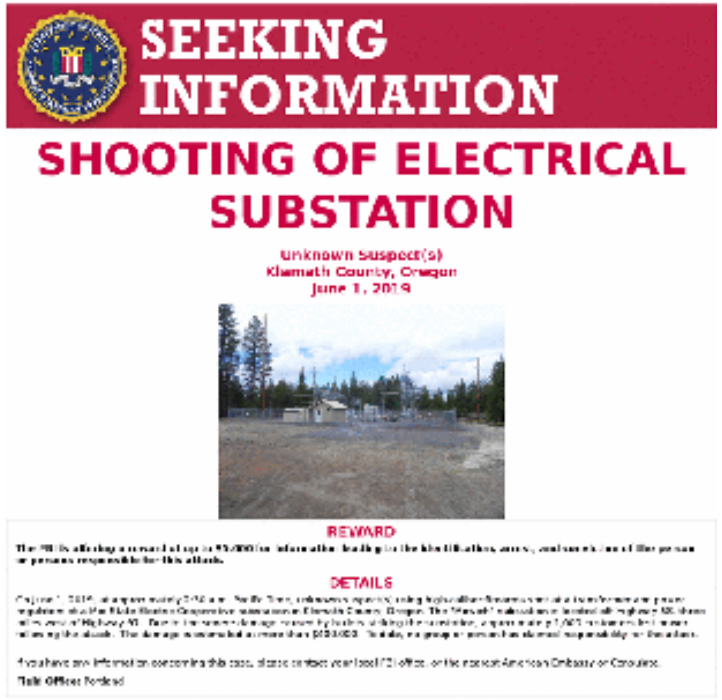
- **Reasons for Rescue**
  - Fire/Explosion of Energized Equipment.
  - Atmospheric: Lack of O2 or other Hazardous gases.
  - Medical Event: i.e., cardiac episode, twisted ankle, etc.
- **Critical Rescue Information**
  - Power Utility must satisfy all its safety protocols. “Clear To Perform Your Work”
  - Fire Department will satisfy its own safety protocols.
  - Power Utility Person In Charge transfer of information to Fire Department Office In Charge.

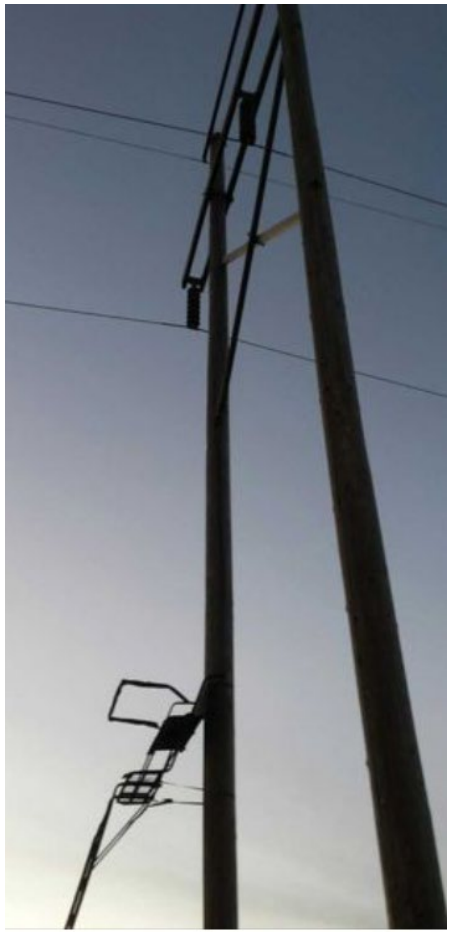
Unlawful Activity

PROTECT YOUR EVERY DAY
KNOW THE SIGNS
OF TERRORISM-RELATED SUSPICIOUS ACTIVITY

If you SEE something SAY something

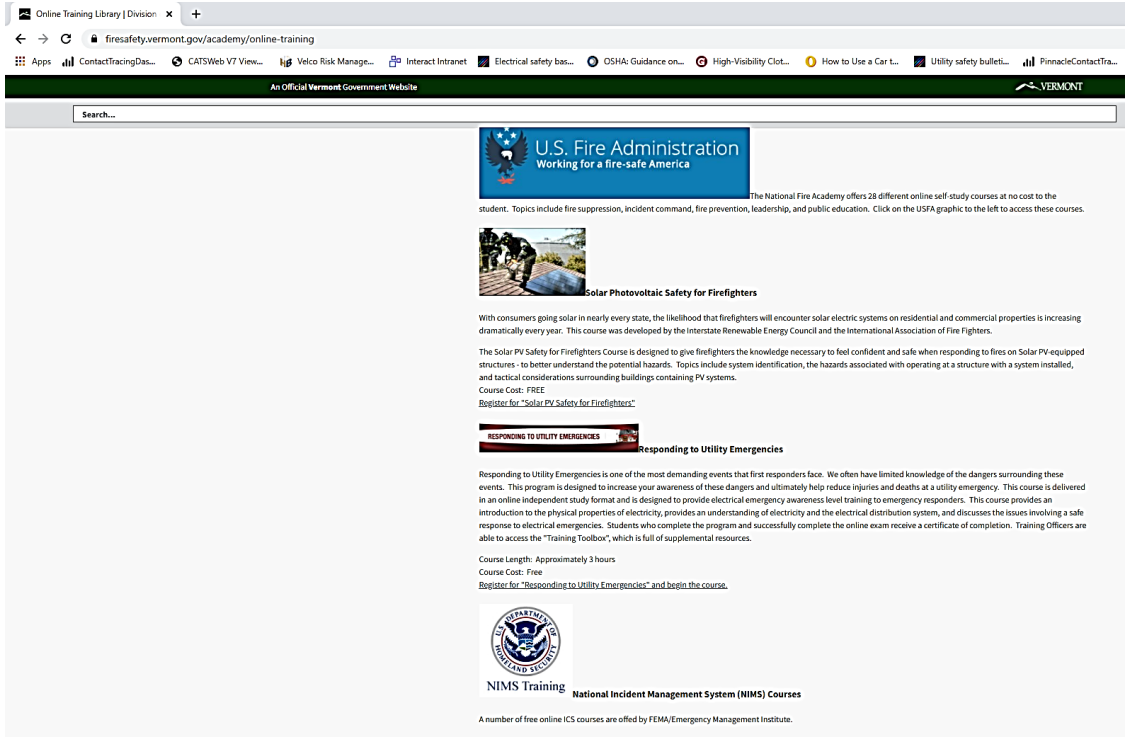
PHOTOGRAPHY/ SURVEILLANCE
Taking pictures or videos, or a prolonged interest in personnel, facilities, security features, or infrastructure in an unusual or covert manner

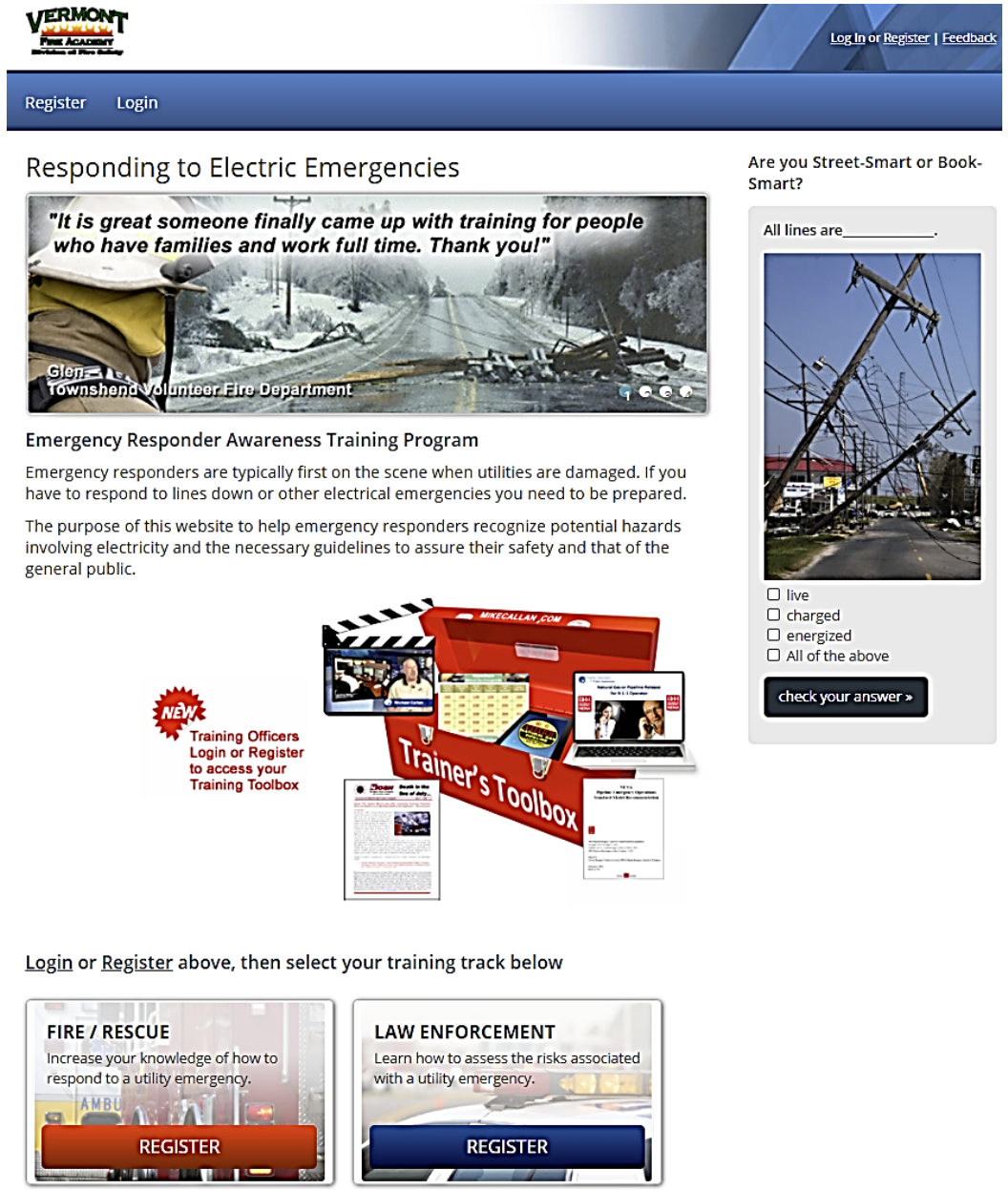




Vermont Fire Academy Online Training

https://firesafety.vermont.gov/academy/online-training





Review

- Protect yourself and bystanders – Do not rush in, use situational awareness, secure the scene.
- Assume all power lines are energized and extremely dangerous, along with anything they are touching, including the ground nearby.
  - Stay as far away as possible.
  - Do not park equipment under power lines.
  - Consider additional hazards such as gas or anything power lines may be in contact with.
- Have your dispatcher call the Utility immediately for emergency assistance to de-energize the line.
- Do not approach any electric/gas emergency until made safe by authorized utility protocols and communicated through the on-site Incident Commander.

Thank you for all that you do to help protect & serve our communities, stay safe!

- Follow up training
- Survey
- Q & A