



# Energized vs. De-Energized Work Hazards

## TOOLBOX TALK: Energized vs. De-Energized Work Hazards

*RATTLIR Safety Series – “Strike Before It Bites”*

### Purpose

Working on energized electrical systems significantly increases the risk of arc flash, electric shock, equipment damage, and catastrophic outcomes. This toolbox talk explains the differences between energized and de-energized work, NFPA 70E requirements, justification for energized tasks, and safe work practices.

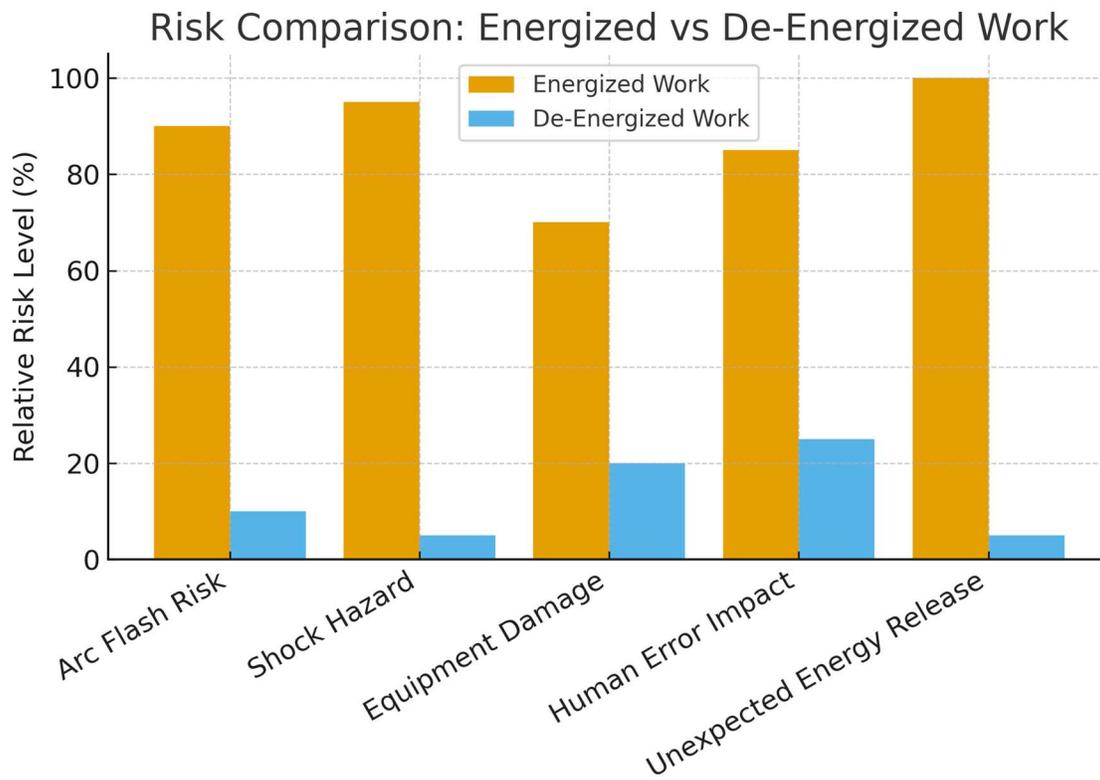


Figure 1 – Relative risk levels for energized versus de-energized work.

### Energized Work vs. De-Energized Work



# Energized vs. De-Energized Work Hazards

Energized Work: Performing tasks on equipment that is still electrically live (50V or greater). This exposes workers to arc flash and shock hazards.

De-Energized Work: Tasks performed after equipment has been properly isolated, locked out, tagged out, and tested for absence of voltage.

## Why Energized Work Is Extremely Dangerous

- Arc flash temperatures can exceed 35,000°F.
- Shock hazards can cause cardiac arrest, burns, or internal injuries.
- Unexpected device failure or human error can instantly create lethal conditions.
- PPE reduces injury severity but does NOT eliminate risk.
- Even small control circuits can induce dangerous shocks.

## When Energized Work Is Permitted (NFPA 70E)

Energized work is only allowed when:

1. It is infeasible to de-energize (ex: testing, diagnostics, troubleshooting).
2. De-energization introduces additional hazards (ex: life-support systems, critical process shutdowns).
3. De-energization creates greater risk than leaving the system energized.

Administrative convenience or “saving time” is NOT a justification.

## Requirements for De-Energized Work (LOTO & Verification)

- Isolate all energy sources.
- Apply Lockout/Tagout devices.
- Test for absence of voltage using properly rated equipment.
- Install grounding (where required) to eliminate induction or stored energy.
- Confirm zero-energy state before beginning work.

## PPE Requirements

Energized Work: Requires full arc-rated PPE per incident energy or PPE category – face shields, balaclava/hood, gloves, FR clothing, footwear, and insulated tools.

De-Energized Work: Standard PPE and task-specific protection after verifying absence of voltage.



# Energized vs. De-Energized Work Hazards

## Best Practices to Eliminate Energized Work

- Always de-energize unless absolutely impossible.
- Use remote switching/racking when available.
- Schedule outages when feasible.
- Maintain equipment to reduce failure risk.
- Improve labeling and documentation.

## Emergency Response

- Do not touch a person in contact with live equipment – disconnect power first.
- For shock: call emergency services and begin CPR/AED if trained.
- For arc flash: treat burns with sterile, dry dressings; do not apply ointments.
- Secure the area and await qualified responders.

## Discussion Questions

- Is there any justification for energized work today?
- Have all LOTO steps been properly applied?
- Are workers trained and qualified for the task?

## RATTLIR Takeaway

De-energized work is always safer. Energized work multiplies hazard severity with no margin for error. Planning, verification, and disciplined execution ensure we strike before it bites.