

# Sectionalizing Major Underground Feeders

CenterPoint Energy  
TE Connectivity

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EVERY CONNECTION COUNTS



# Project Goal and Scope

## GOAL

Improving grid reliability and resiliency by adding sectionalizing switches to a 3-phase feeder circuit. This solution will allow the grid operator to restore the circuit and redundancy to half the circuit following a lockout fault event on the circuit.

## SCOPE

- Install recloser at midpoint of the feeder circuit backbone
- Install directional fault indicators inside the feeder near the recloser to reduce the time required to locate the fault
- Establish SCADA link with the new recloser and install a directional fault indicator to enable grid transparency

# Fault Scenario – Current Response

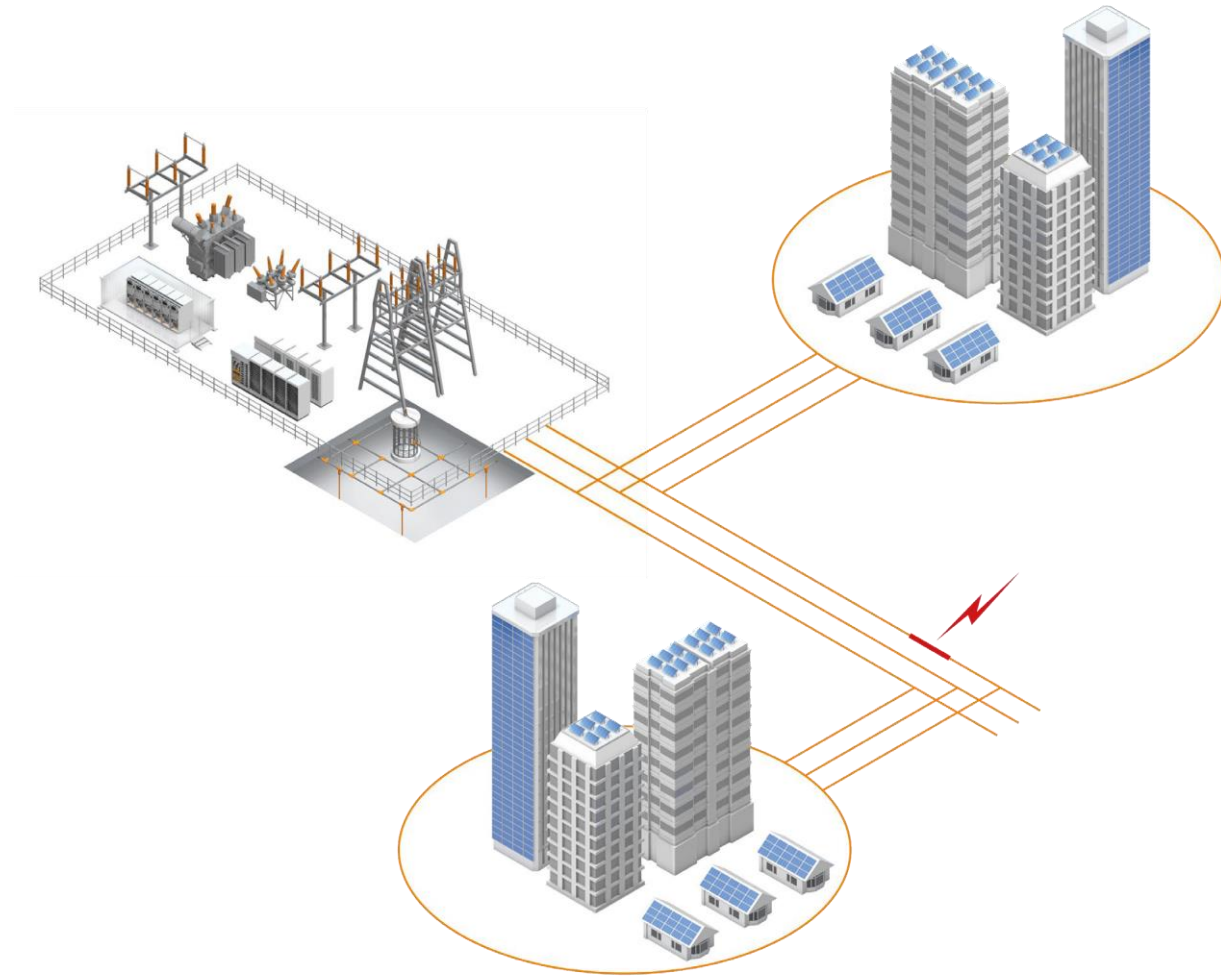
## Fault on backbone occurs, circuit locks out

1. The grid operator gets and executes the switching order
2. Ground circuit & isolate circuit
3. Connect fault finding equipment
4. Find fault location, complete repairs, and restore circuit

***12-18 HOURS TYPICAL TIME ELAPSED UNTIL FAULT IS REPAIRED AND NORMAL OPERATION IS RESTORED***

## Drawbacks

- One fault could disrupt the entire circuit and redundancy
- No information on fault location
- No way to sectionalize circuit
- Long time required to restore the circuit and redundancy increasing the outage impact



# Fault Scenario – Future Response

## Fault on backbone occurs, circuit locks out

1. Our directional fault indicator identifies the circuit portion where the fault happened via SCADA
2. If appropriate, operations utilizes a sectionalizer to isolate the faulted section of the circuit
3. Reclose the breaker at the substation to restore power.

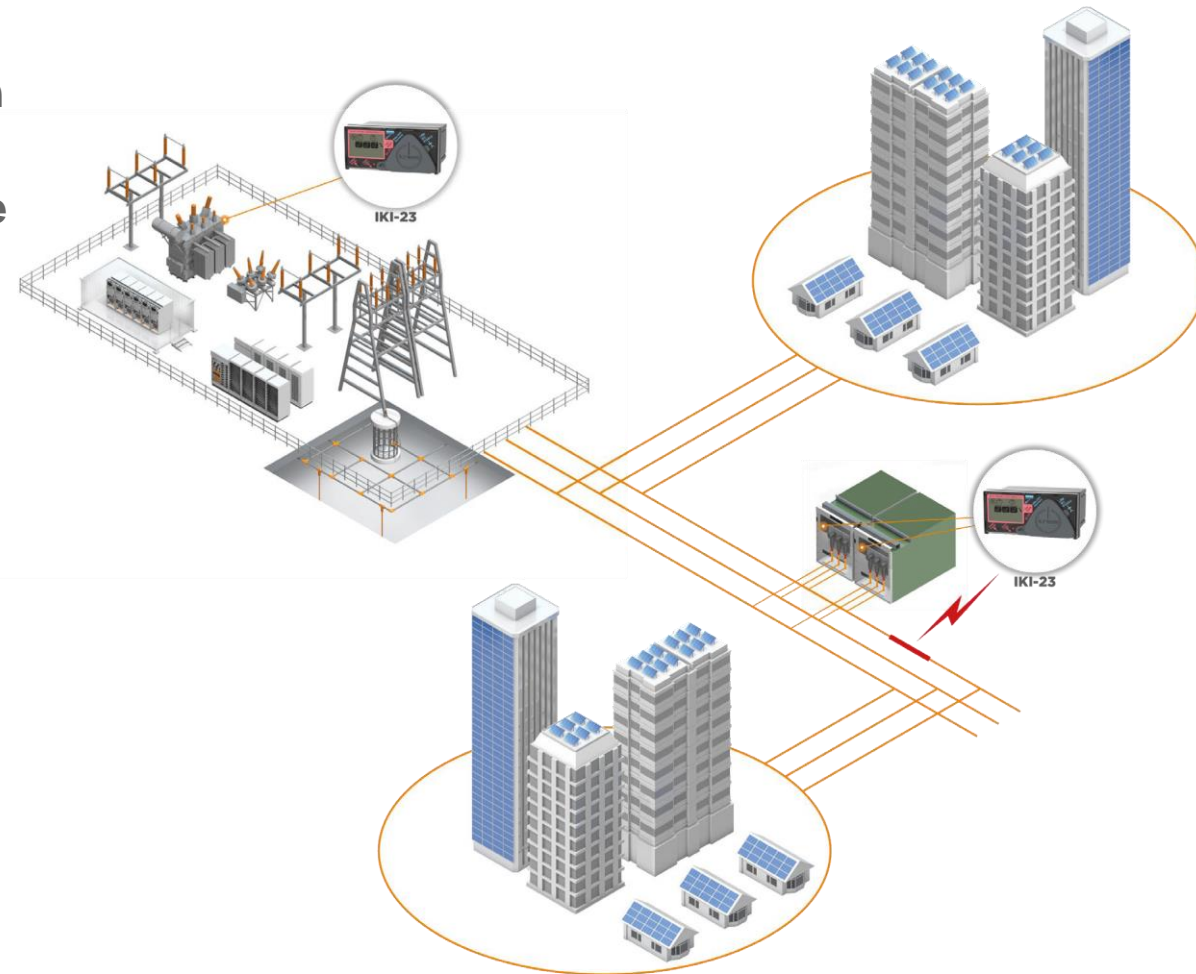
*The grid operator will be able to perform the next steps while the power is already back on for some customers.*

4. Get and execute switching order
5. Ground circuit & isolate circuit segment
6. Connect fault finding equipment
7. Find fault location, complete repairs, restore circuit segment

**6-9 HOURS TYPICAL TIME ELAPSED UNTIL FAULT IS REPAIRED AND NORMAL OPERATION IS RESTORED**

## Expected Benefits

- Improve grid transparency - Immediate knowledge of which part of circuit is faulted
- Effective deployment of field operators reducing the time to maintenance



# Fault Current Indicators for Underground Distribution

## IKI-23

The Kries IKI-Line monitors over-current and fault conditions enabling faster fault location and reducing outage duration.

Fault Current indicators help operators make quick, informed decisions in the event of an unplanned outage.



IKI-23

## FEATURES & BENEFITS // IKI-23

- Directional short-circuit fault indication
  - *When paired with CAPDIS voltage monitoring system*
- Earth fault with direction
- Static earth fault with direction
- Transient earth fault with direction



IKI-23 combined with CAPDIS (Voltage Detection)



**INTEGRATED BATTERY BUFFER.  
MAINTENANCE-FREE.**

# Summary of Benefits Offered

- Enhanced grid transparency, reliability and resiliency
- Enabling quicker fault location via IKI-23 and SCADA
- Reducing the time to deploy field operations teams
- Reducing the outage duration and improving SAIDI
- Increase customer satisfaction

## FINAL NOTE

CenterPoint Energy is evaluating Kries' IKI-Line as a possible solution. This project is part of that evaluation.