How many Reclosers / Smart Switches are Too Many? -

Sectionalizing to 300 customer zones using only local intelligence

Andrew Kasznay
Eversource – CT Loops

• 1,380 automatic recloser loop zones
  – 1139 sectionalizing reclosers
  – 241 Midpoint reclosers
  – 768 Tie reclosers
• 69% of CT ‘s 1.2 million customers are within auto-loops.
• Averaging 480 customers within a zone

Does not include Radial reclosers
Recloser Loops

LOOP SCHEMES - Loop schemes have been developed to improve reliability and maintain service continuity to the greatest number of customers. In a loop scheme, two or more distribution circuits are tied together with a normally open recloser equipped with a tie control. The same model of recloser is used for each application, however, there are differences in the control package. There are three types of controls which can be configured in various ways. Examples of a three and a five recloser loop are shown.

Three Recloser Loop

Five Recloser Loop

RECLOSED GUIDE
NORTHEAST UTILITIES DESIGN & APPLICATION STANDARD DTR 18.441
Eversource Smart Switches – How they work

- **SR 140K**: E initial
- **TR 100K**: E2 - Close
- **E initial**: E1 - Reclose
- **E initial**: E2 - Reclose

600 customers

- 200 Customers
- 200 Customers
- 200 Customers

- **Open**: 600 customers

- **Close**: Further reduces customers per zone - by focusing on zones with greater than 500 customers
- **Close**: Reduce Fault Energy - by implementing a protection improvement
- **Close**: Operates independent of any communication systems - by using local logic imbedded in the smart switch
- **Close**: Facilitates future DMS Implementation – by providing more granular SCADA data and control

- **Lockout**: E initial
- **Lockout**: E1 - Reclose
- **Lockout**: E2 - Reclose

- **Lockout**: e2
- **Lockout**: e3

- **Lockout**: 600 customers
Eversource - Smart Switch
April 3 2015 Event - Sequence of Operations

Fault

SR Open
SR Reclose
SR Open
SS(s) Open
SR Reclose
SS Reclose
SS Reclose
SS Open
TR Close
TR Open
Eversource Smart Switch Fault

June 23 2015 Event - Sequence of Operations

Fault
Step 1
Step 2
Step 3
Step 4

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1. OPEN
2. CLOSE
3. CLOSE
4. CLOSE

11N88-4001
11N88-4000
26N7-93T

SR 140K
TR 140K

OP
CL

Upstream Fault

11N88 Normal Supply

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16:22:28
16:22:58
16:23:13
16:23:43
16:23:45