

Hello Electric League!



Douglas W. Ehlers, PE – Reinventing the Circuit Breaker
Atom Power, Inc.



About the Speaker –

Degreed and licensed P

Interdisciplinary knowle

Designed modifications
increase safety and effic

Electrical expert for for

Solutions specialist for A

First and only “Shocking
in East Africa



Atom Power

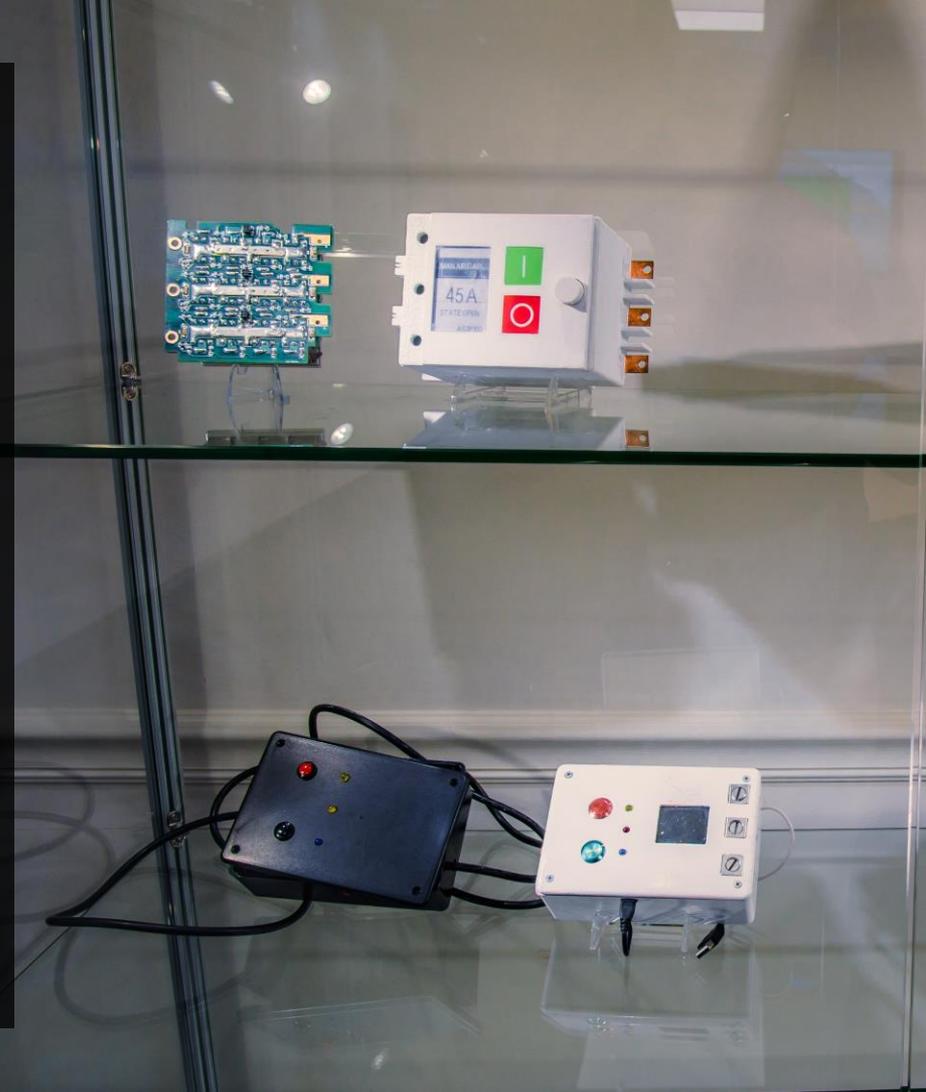
Founded in 2014 in Charlotte, NC with a mission to save lives and facilities, and simplify power distribution with solid-state innovations.

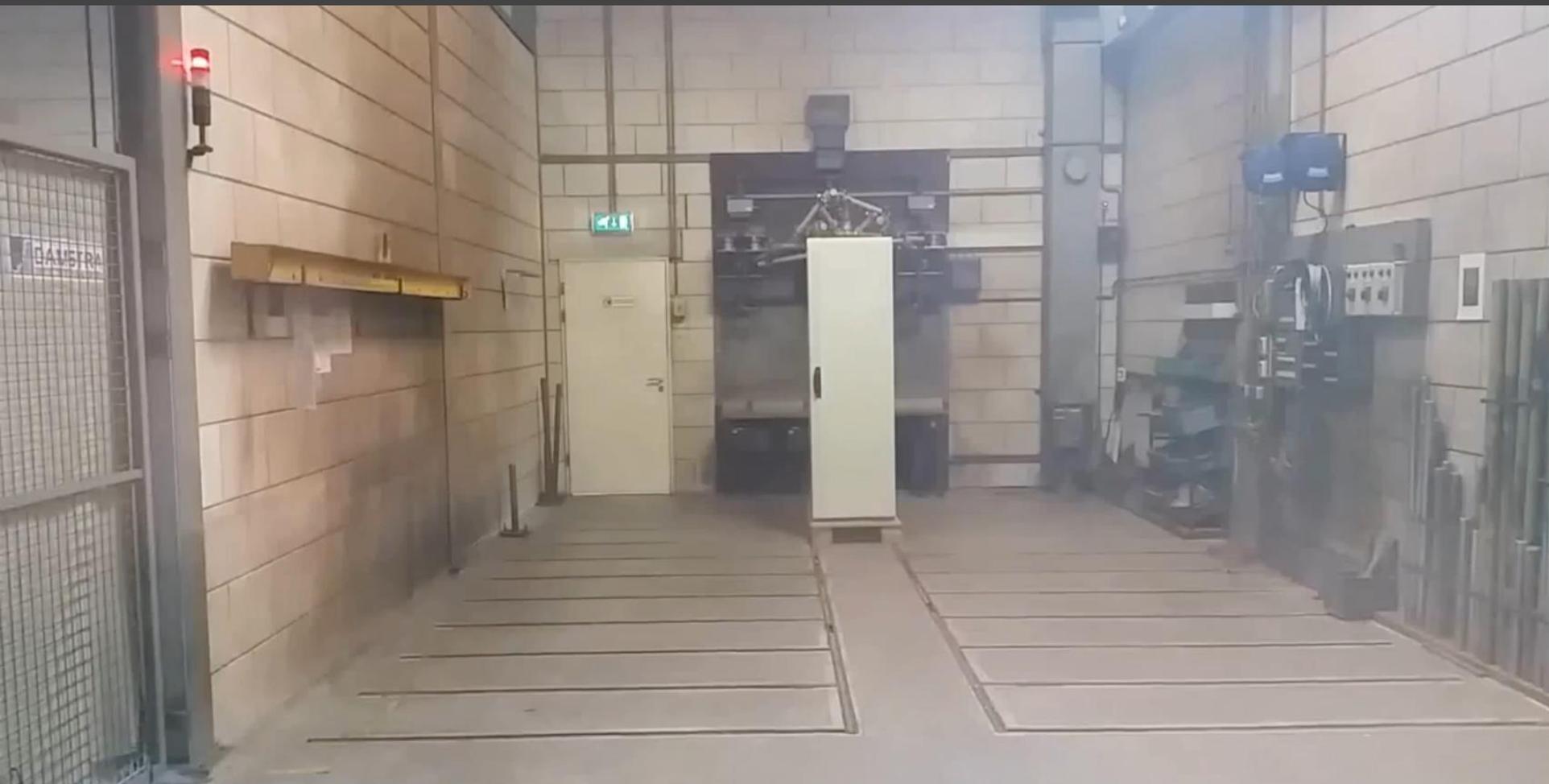
Our investors:

SIEMENS

ABB

EATON



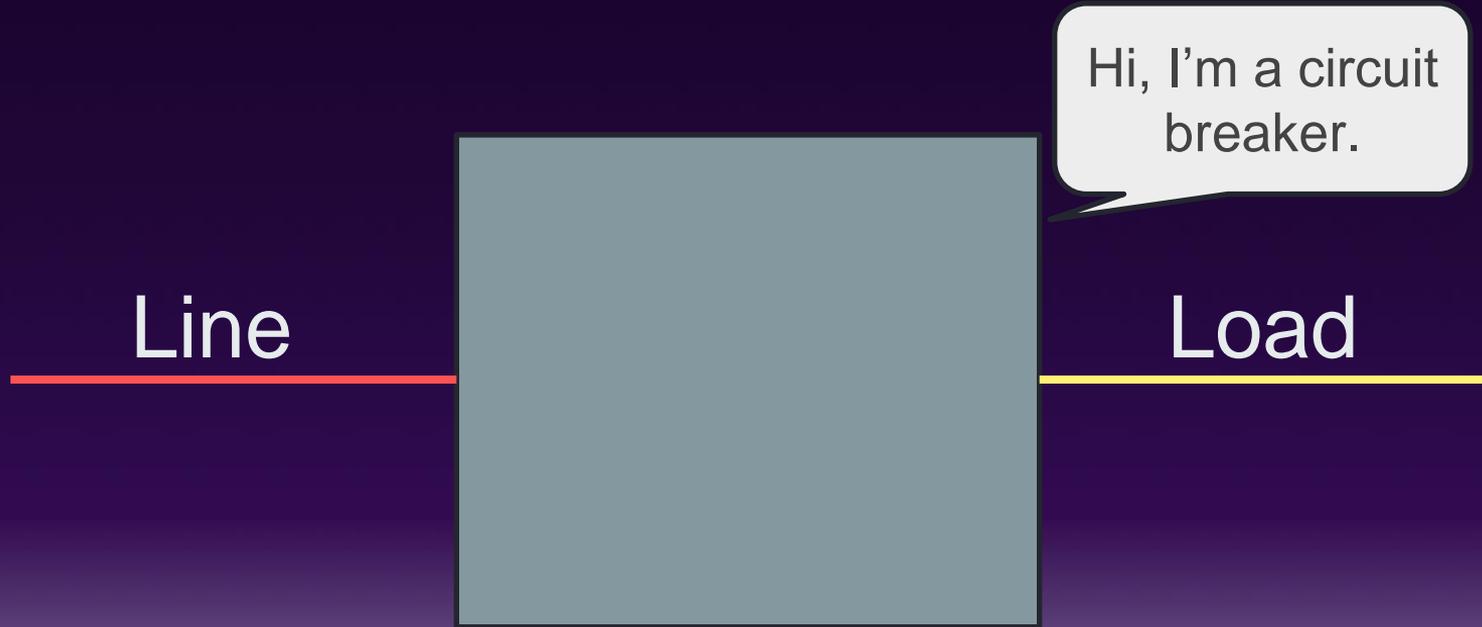


If you could reinvent the
circuit breaker...

What improvements would
you make?

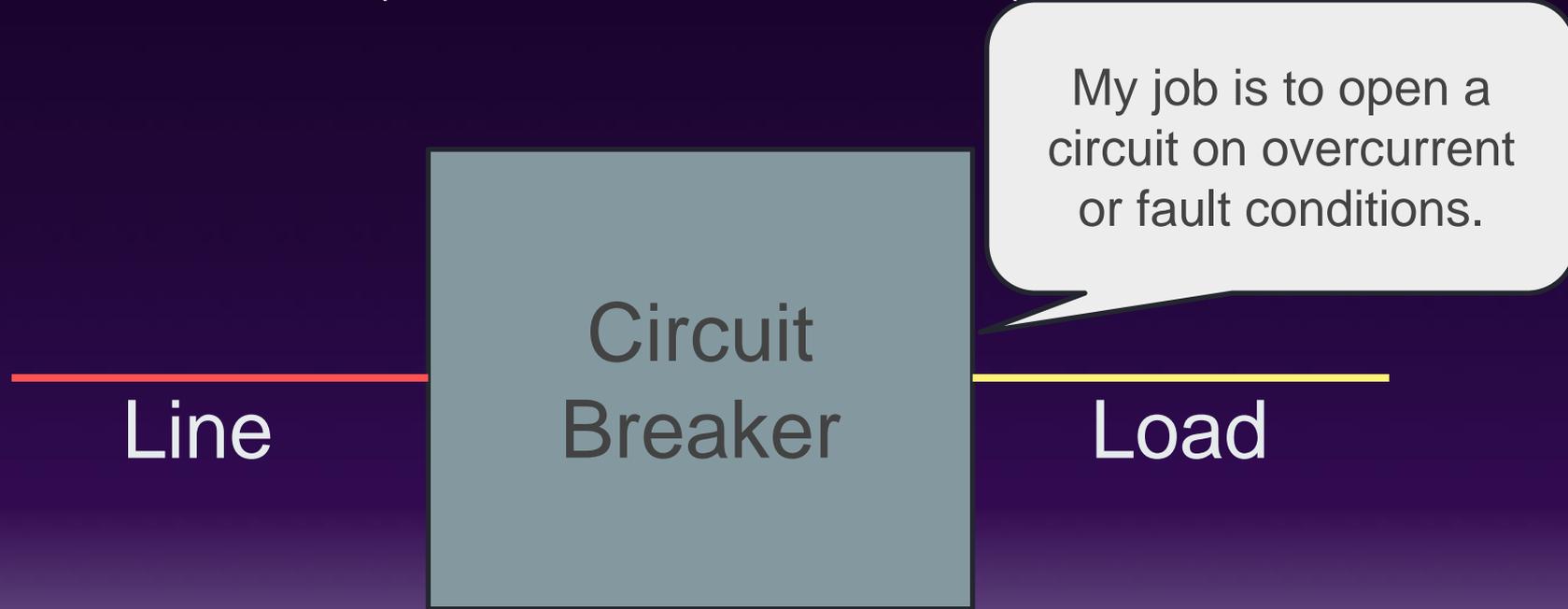
The Circuit Breaker

(Assume the circuit breaker is a box)



The Circuit Breaker

(Assume the circuit breaker is a box)



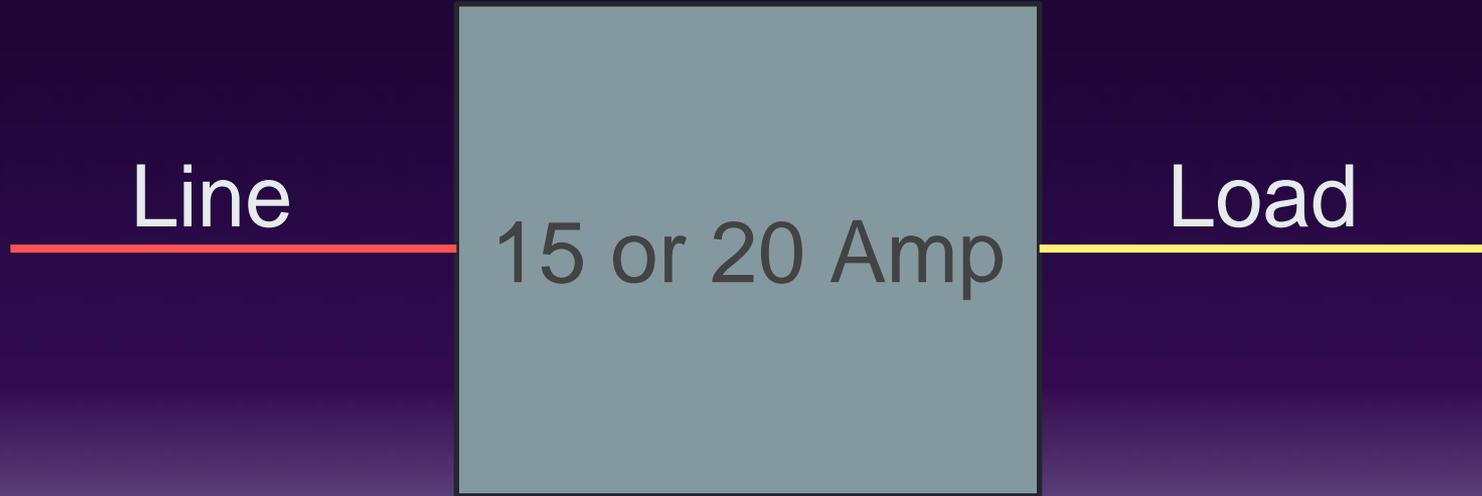
The Atom Switch

(Now, assume the box is a Solid-State Circuit Breaker)



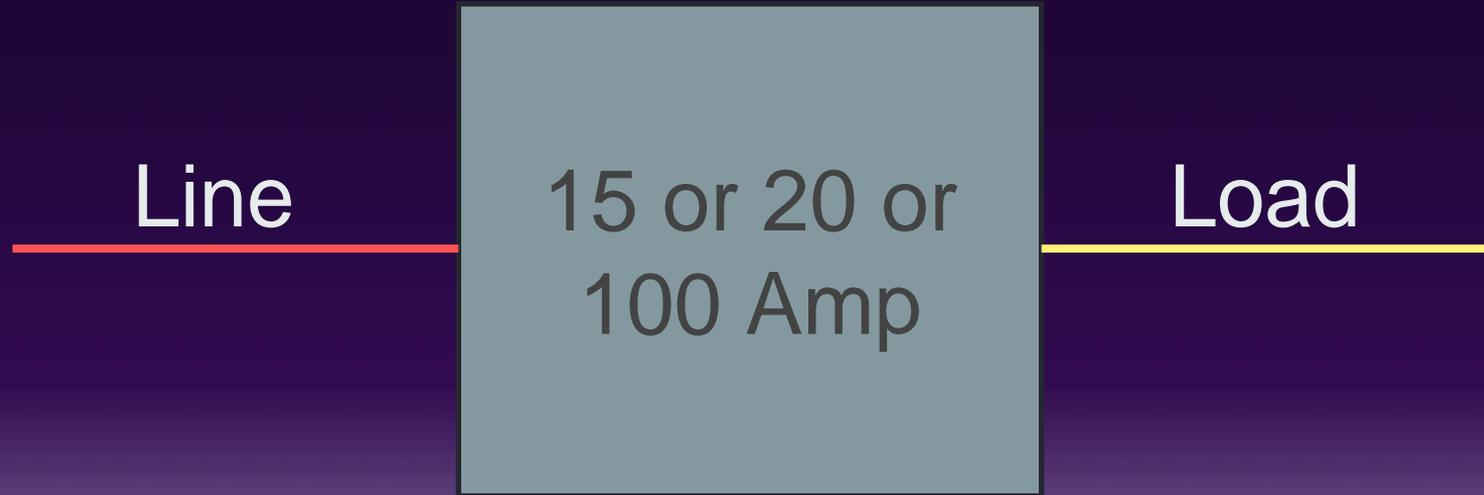
The Atom Switch

(Solid-State Circuit Breaker)



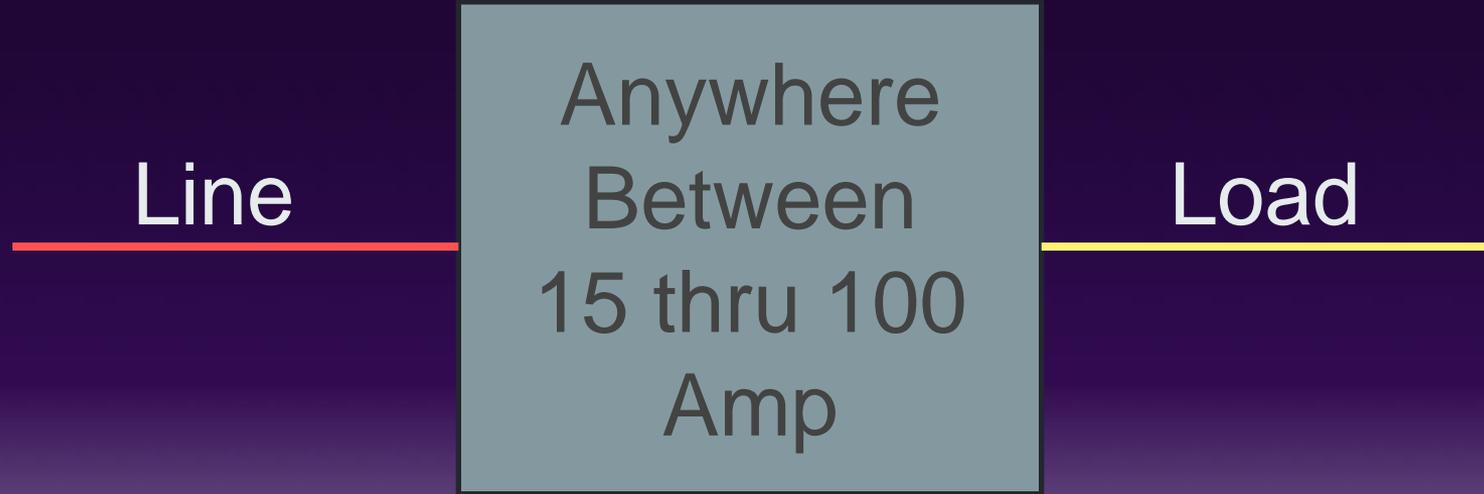
The Atom Switch

(Solid-State Circuit Breaker)



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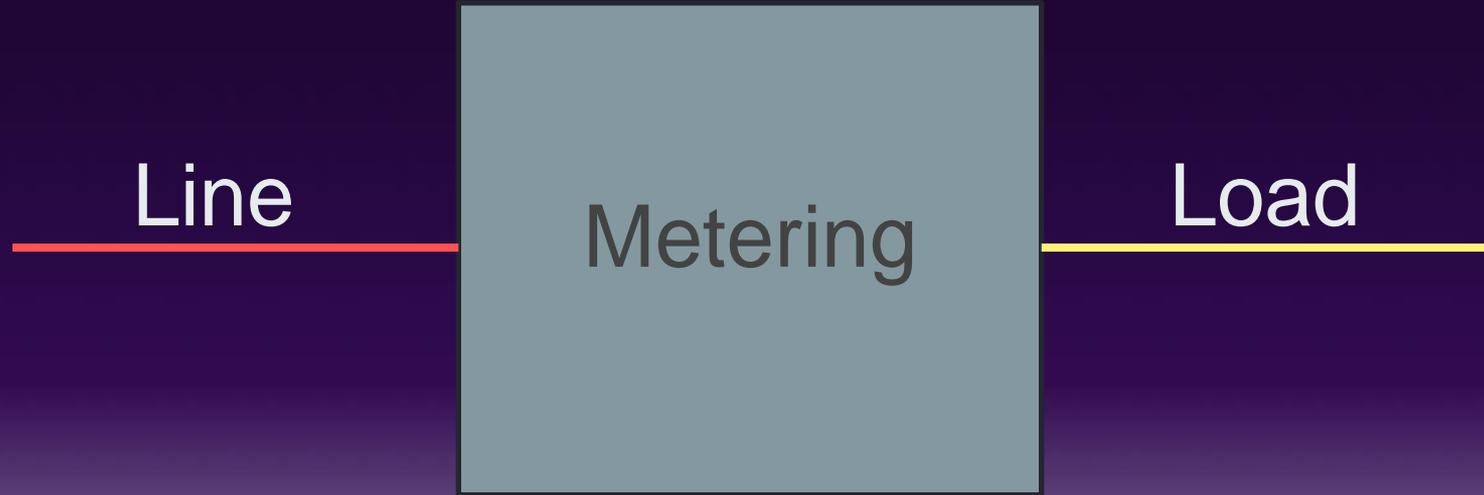
The Atom Switch

(Solid-State Circuit Breaker)



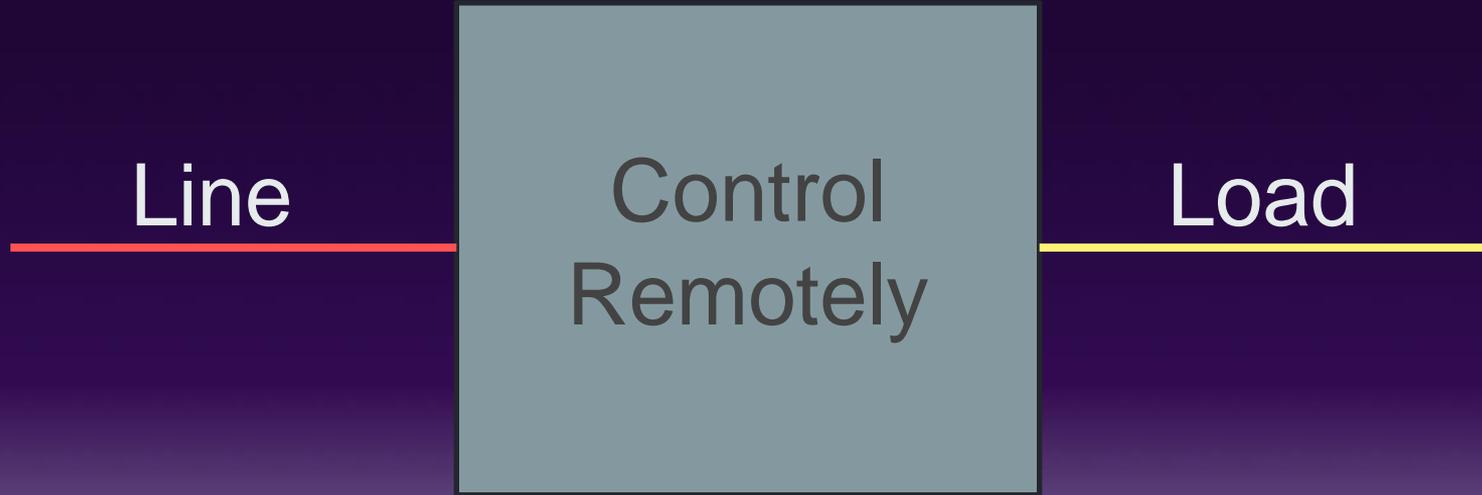
The Atom Switch

(Solid-State Circuit Breaker)



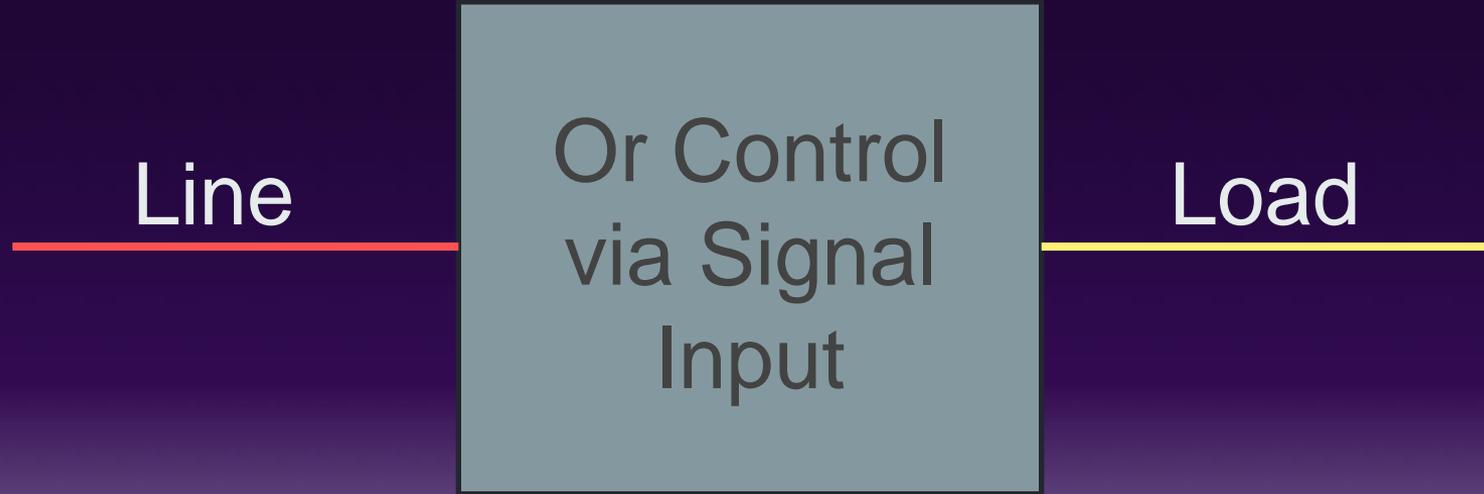
The Atom Switch

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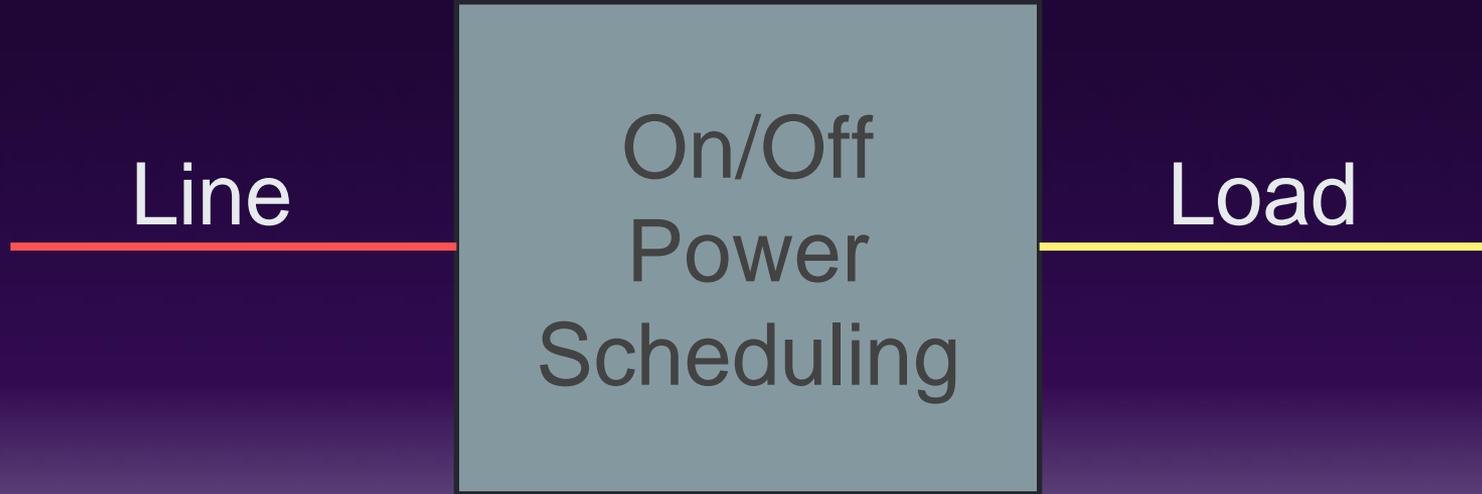
The Atom Switch

(Solid-State Circuit Breaker)



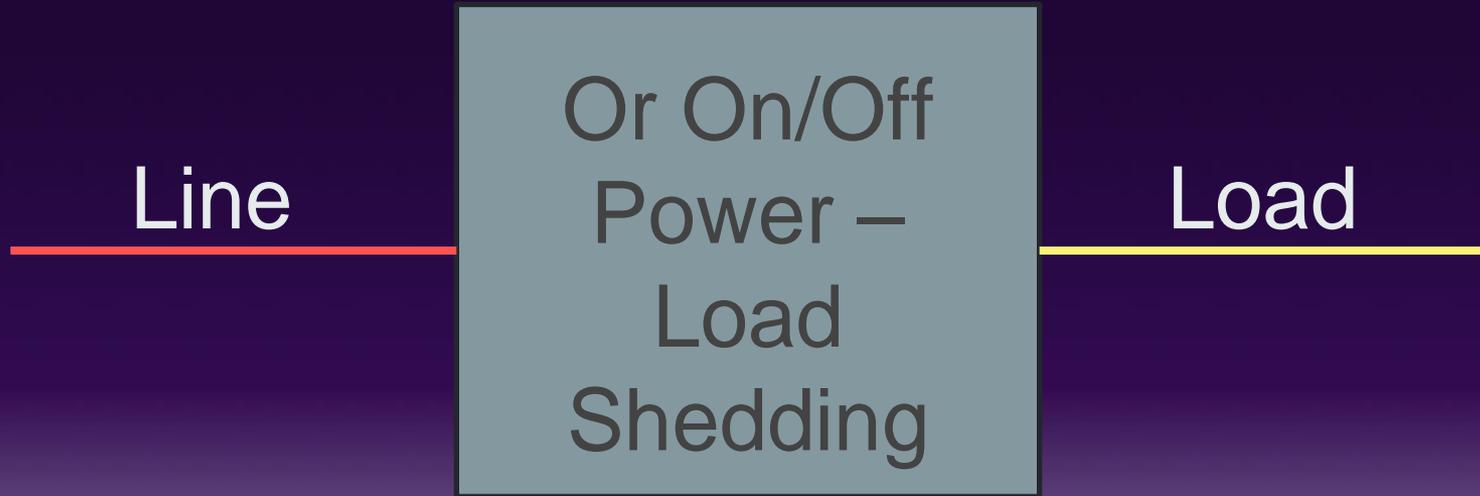
The Atom Switch

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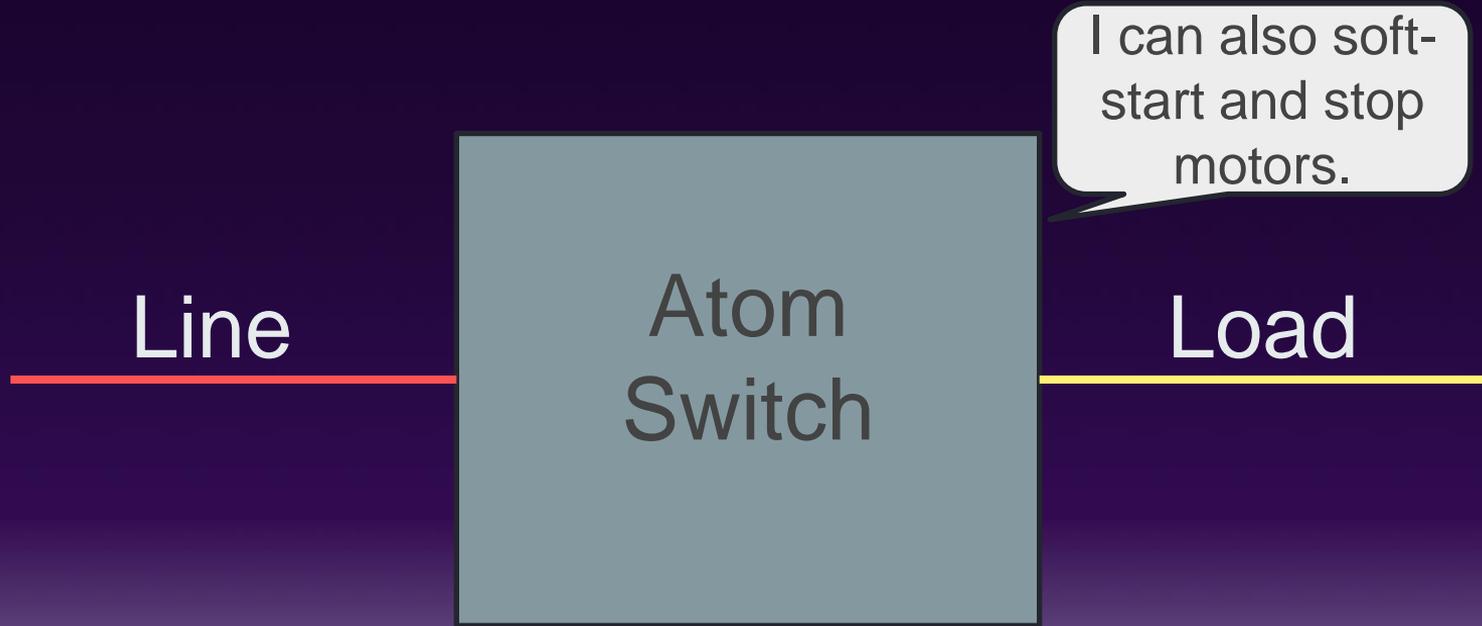
The Atom Switch

(Solid-State Circuit Breaker)



The Atom Switch

(Solid-State Circuit Breaker)



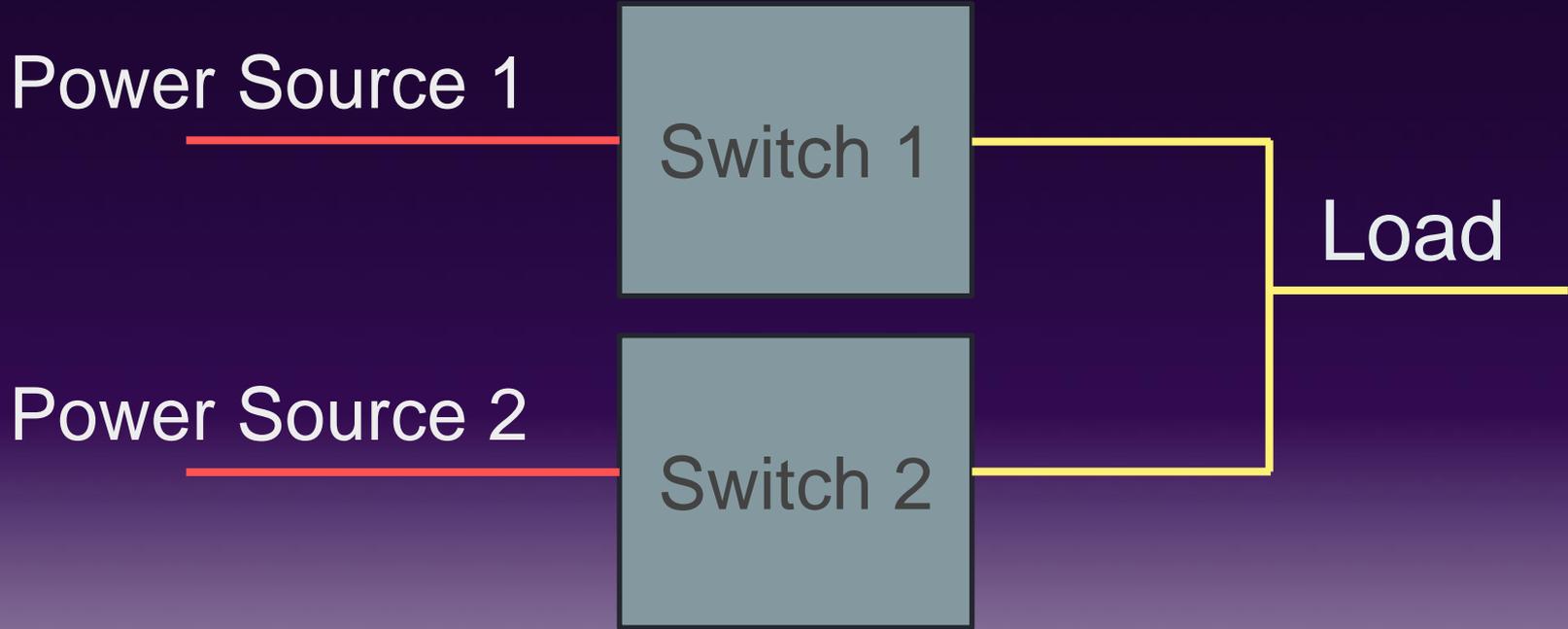
The Atom Switch

(Solid-State Circuit Breaker)



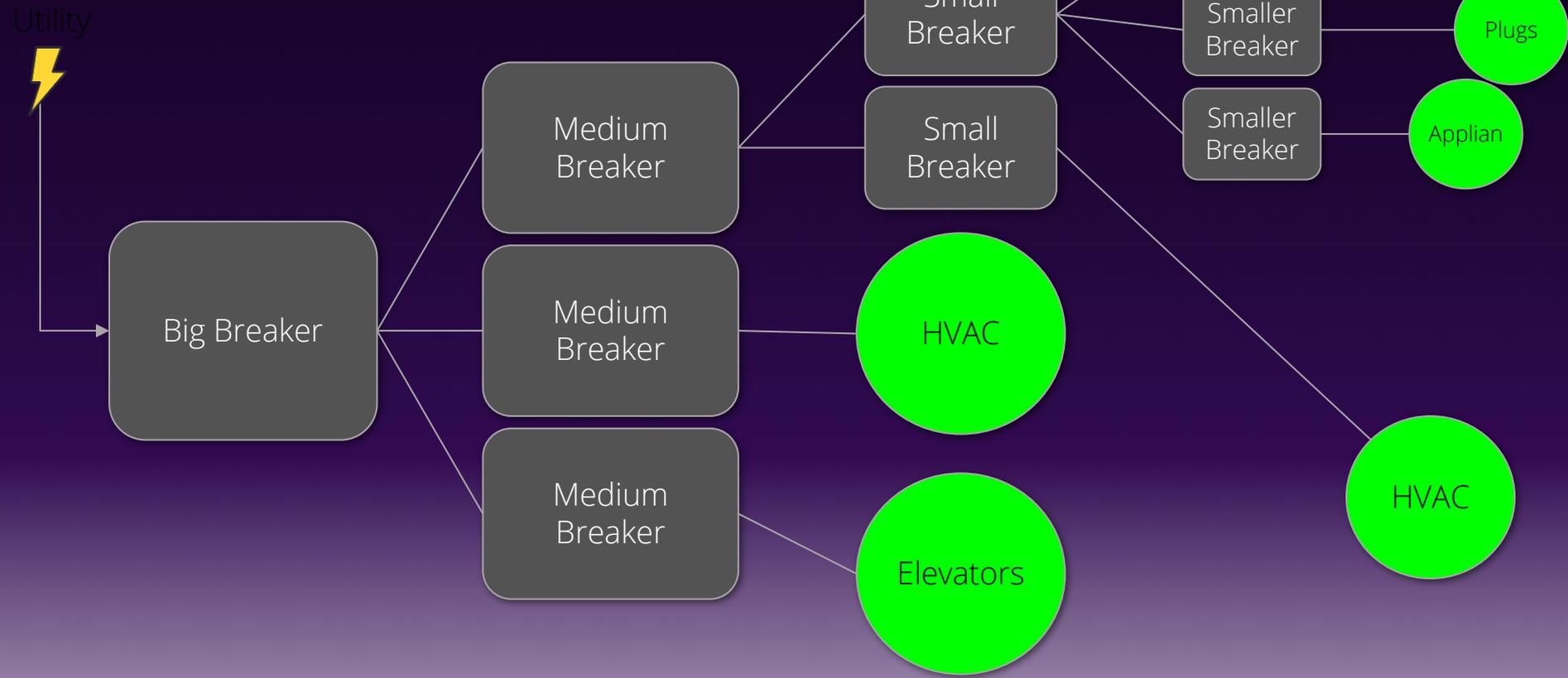
The Atom Switch

(Solid-State Circuit Breaker)

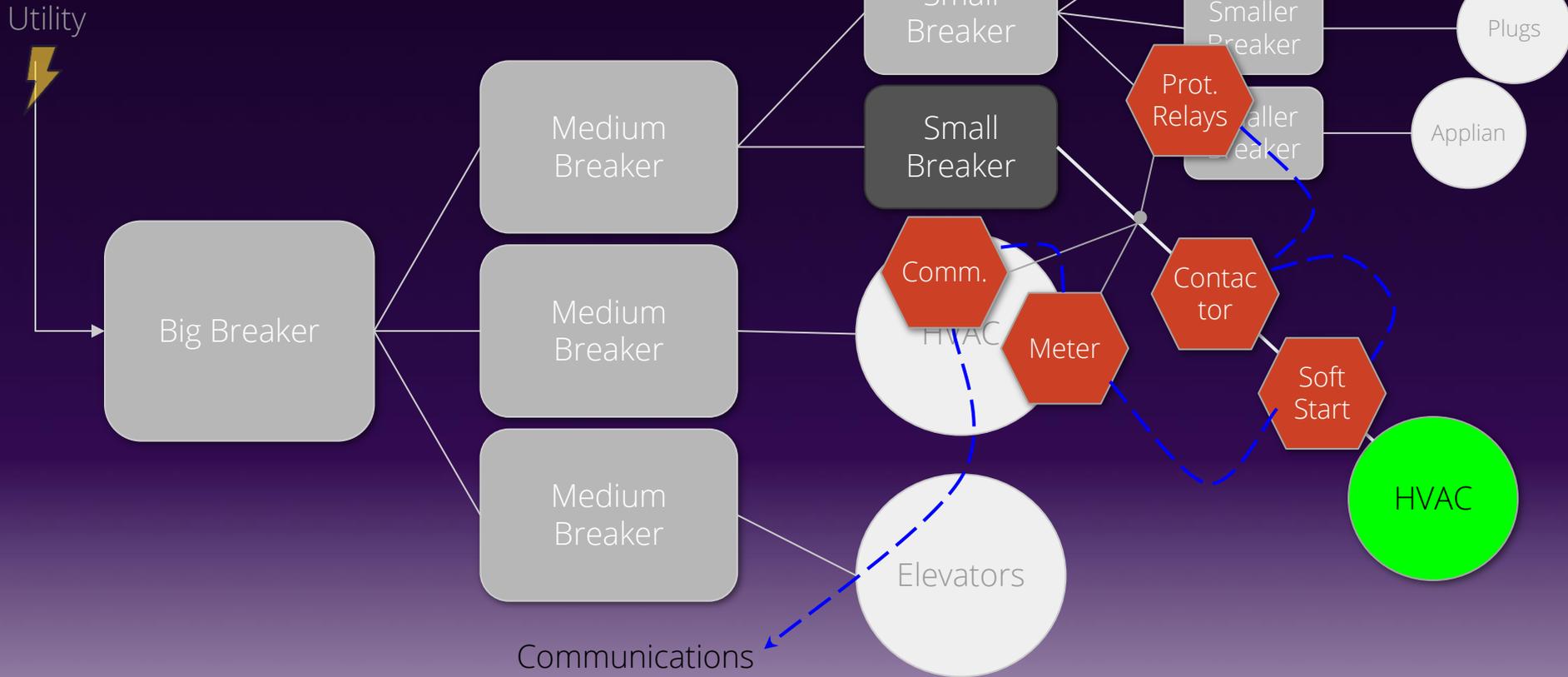


Can Backfeed Through Switches!

Every Building Looks Something Like This....



Let's take a closer look...

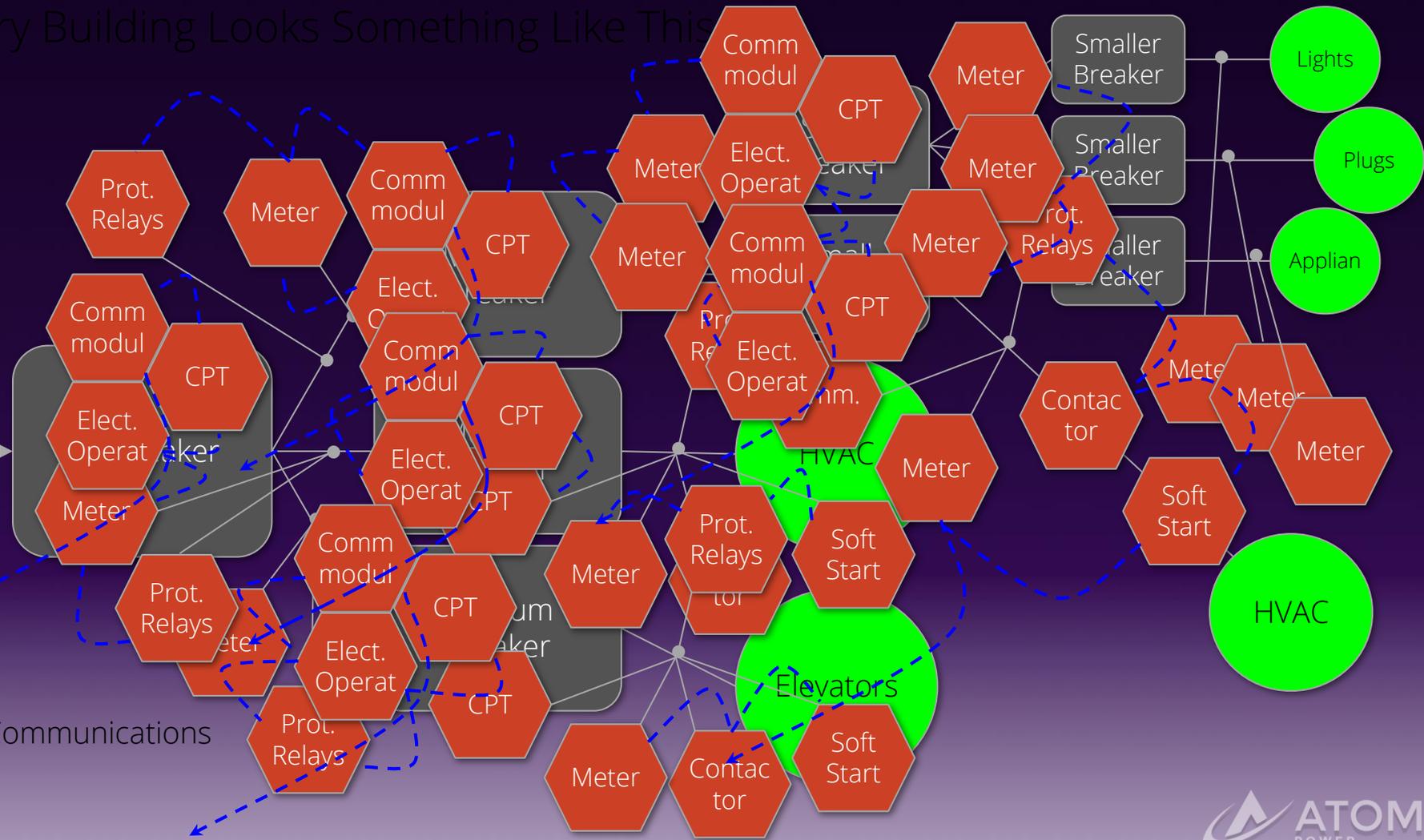


Every Building Looks Something Like This

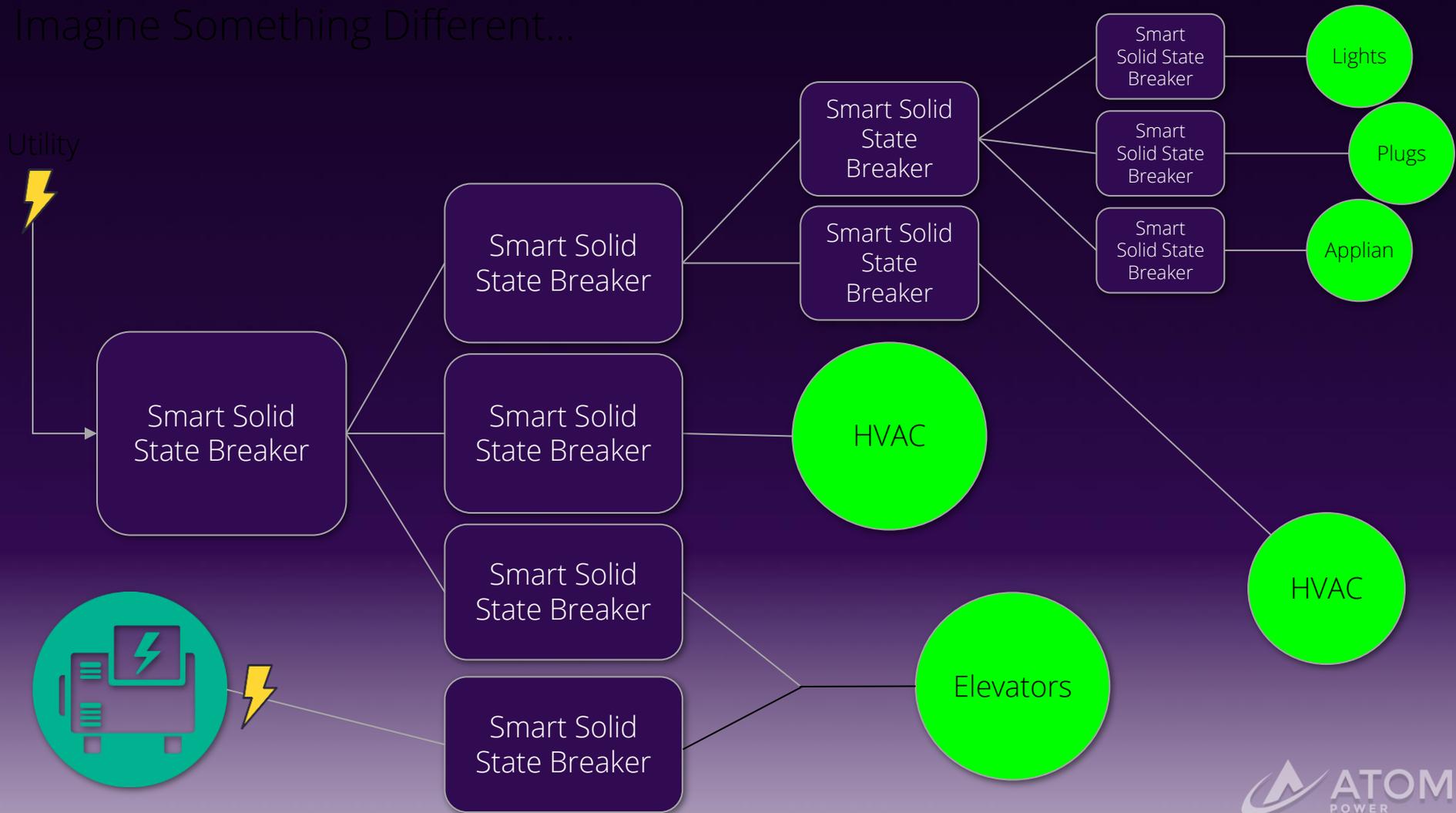
Utility



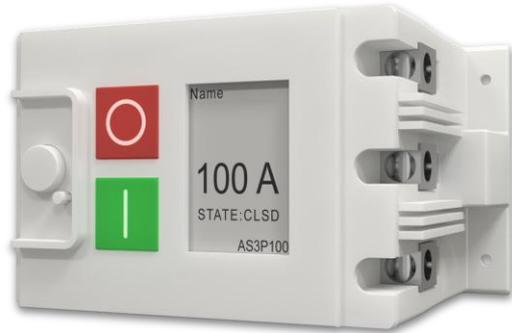
Communications



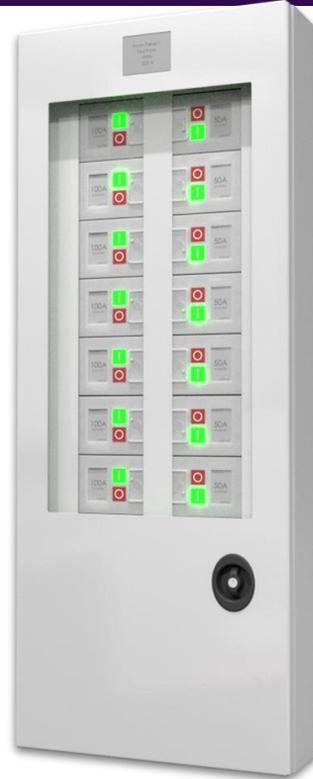
Imagine Something Different...



Atom Power Solid-State Distribution with Atom Power OS



Atom Switch™
(Circuit Breaker)



Atom Panel™
(Aggregator)



Atom OS™
(Interface)



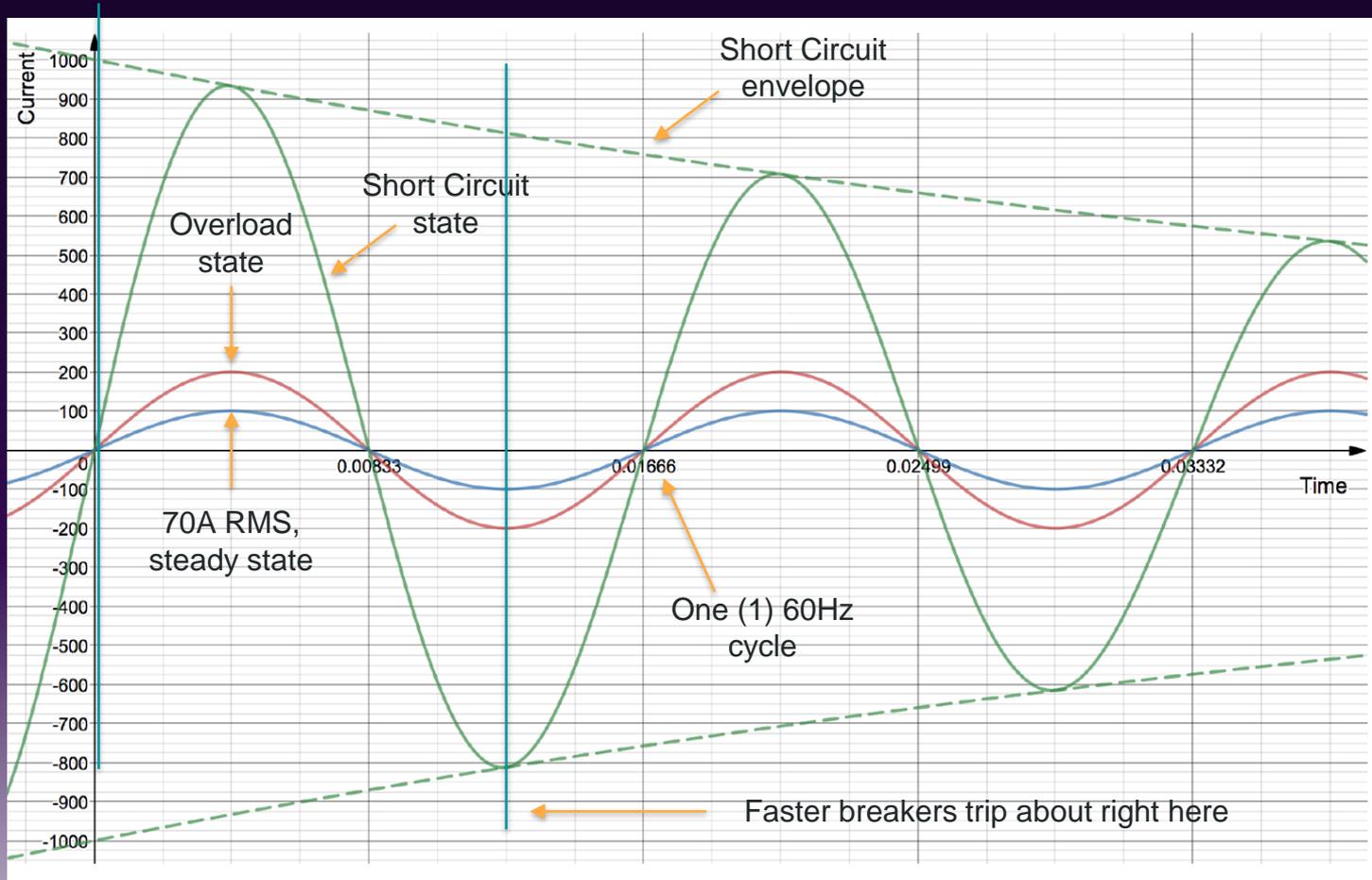
20 ms
(Mechanical Breaker)

Vs.

3 μ s
(Atom Switch)

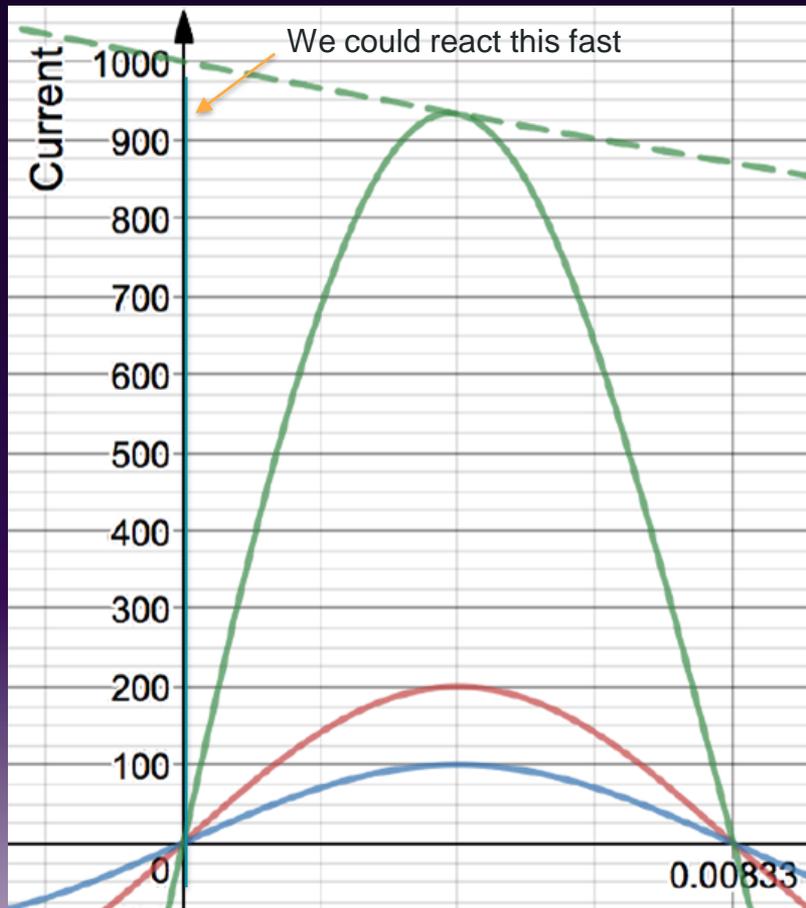
Thousands of times faster!

Circuit Breakers Today



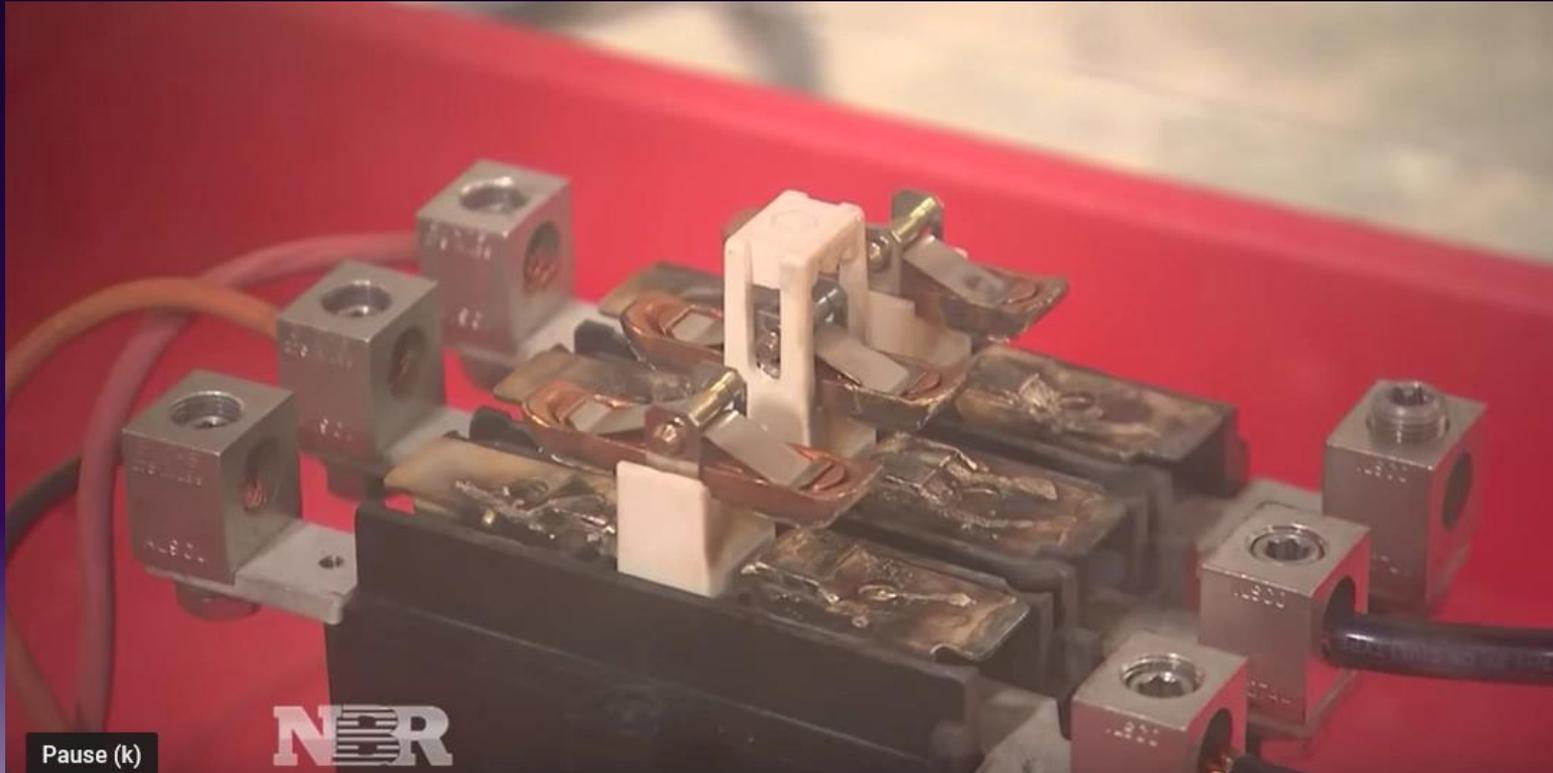
100A circuit breaker example

What if?



Energy does not have time to build up!

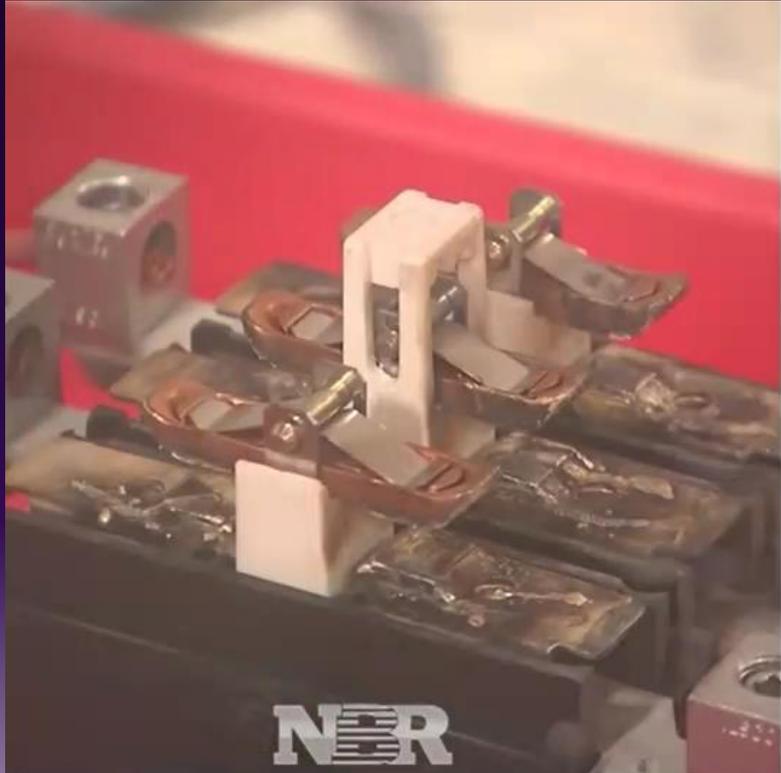
Phase to Phase Short



Pause (k)

NER

Phase to Phase Short



Electric Vehicle Charging

Automatic Transfer

Current Limiter

APPLICATIONS?

Cat. 0 Arc Flash Hazard

Motor Control Center

Remote/Auto Control
Power Management

Other Applications

It's also a Circuit Breaker

Atom Panel
P00P00M
utility
08/27/17
23A

PANEL #3
IP: 192.168.0.11



ATOM
Ver 1.6

Email:

Password:

[Sign In](#)

[Forgot password](#)



Atom Panel
FEED FROM
utility
480/277V
3ØA

PANEL #3
IP: 192.168.0.11



AtomOS Ver 1.6

<= Return to AtomPanel All Panels Schedules Users Log Profile

Current Owner: ryank

STANDBY: MANUAL

ATOM SW 4

90A STANDBY

ASSP100

Firmware Version:1.0

Feeds : HVAC

Push To Close

Push To Open

VOLTS 480 V

AMPS 0 A

kVA 0kVA

TEMP 65 °F

90A

15A Breaker Rating (LT Trip) 100A

20s

0s Short Time Trip 20s

600A

90A Instantaneous Trip 600A

Apply Discard

TCC PLOT Linear Logarithm

Time (s)

Current (Amp)

Current: 90 Amp
This Switch (ATOM SW 4): 20.00 s
Long Trip: 90

This Switch (ATOM SW 4)

Coordinated Switch

Click button below to add switches and ch

ryank

Current Owner: ryank

STANDBY: ATOM OS

Demo switch

100A

STANDBY

ASSP100

Firmware Version:1.0

Push To Close

Push To Open

Feeds : HVAC

VOLTS 480 V

AMPS 0 A

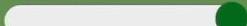
kVA 0kVA

TEMP 65 °F



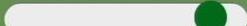
Menu

100A



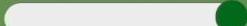
15A Breaker Rating (LT Trip) 100A

18s



0s Short Time Trip 20s

600A



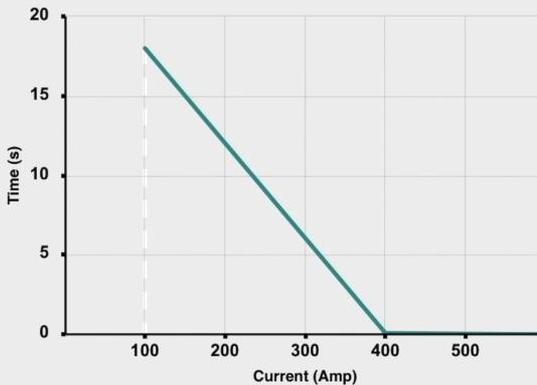
100A Instantaneous Trip 600A

Apply

Discard

TCC PLOT

Linear Logarithmic



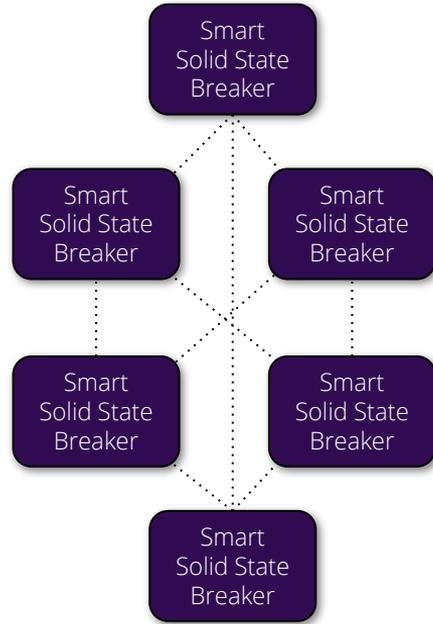
This Switch (Demo switch)

Coordinated Switch

ryank

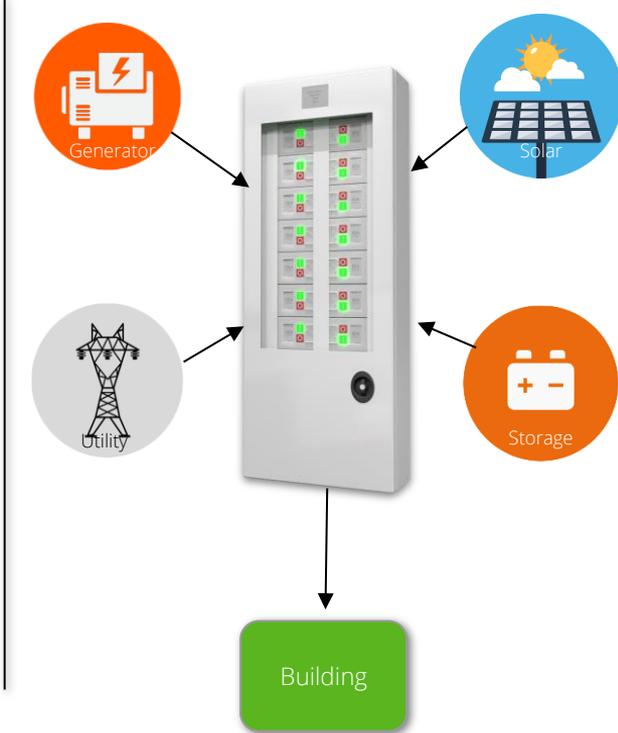
Tomorrow...

Artificial Intelligence



Self-Coordination

DER (Distributed Energy Resources)

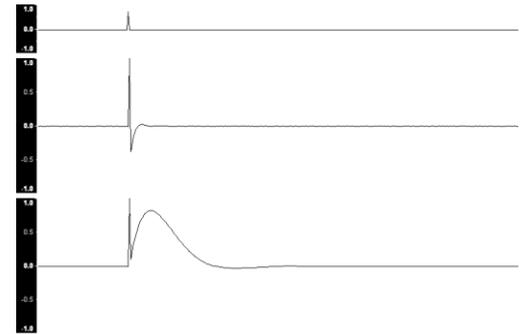


Self-Maintenance

Self-Injection Testing

Self Thermal Testing

Impulse Function Prediction



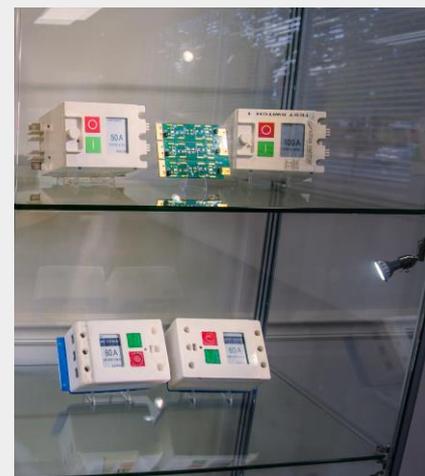
We are just starting...

Join us.



Designed & Built in Charlotte, North Carolina

www.atompower.com



Atom Power, Inc.
10420 Harris Oaks Blvd.
Suite Q
Charlotte, NC 28269

Questions Please

A Summary of things the Atom Switch can do...

- Arc Flash Mitigation (low impedance faults)
 - Destructive Short Circuit Hazard Mitigation
 - Ultra Fast Circuit Protection - **Able to sense and open circuit in 3μs.**
 - 150,000-amp interrupting capacity
 - Remote operation - each Atom Switch is remotely controllable through Atom OS™ or via sensors, dry contacts
 - Dynamic Time-Current Curve Adjustment and Coordination between Atom Switches - each Atom Switch can be set 15-100 amps
 - Remote Firmware Update Capability **for additional functionality**
 - Easily networked with one (1) IP address for the whole Atom Power Ecosystem
 - ***Motor Soft-Starting** capability with ramp-up and ramp-down time adjustable from 1-30 seconds
 - *Functionality in development
- Integrated Metering:
 - Volts
 - Amps
 - Power
 - Integrated relay functions:
 - Under/over voltage protection
 - Under/over current protection
 - Under/over frequency protection
 - Phase loss protection
 - Power Scheduling and Load Shedding
 - Schedule equipment power on/off or set priority to shed or restore power to loads
 - Event Log auto-saved
 - Autonomous - Firmware embedded into each Atom Switch, enabling autonomous, fail-safe operation
 - Integral lockout/tagout air gap mechanism