

CIGRE 2022 – Grid of the Future Symposium

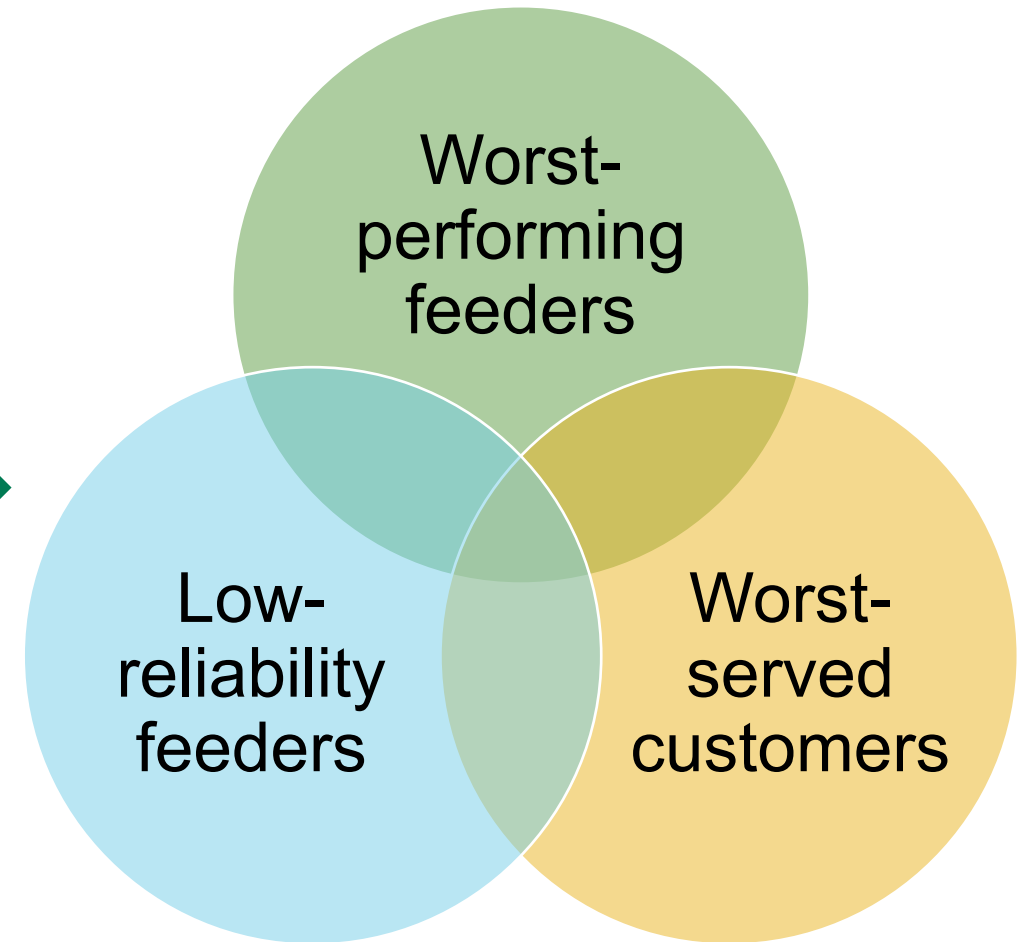
Grid Reliability: Focus on Worst-Performing Feeders



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Reliability — An Evolving Focus



An Increased Focus on Worst-Performing Feeders



Changing
international
perspective



Drivers of
increased
focus



Regulatory &
technological
response

Changing international perspective | Measuring Reliability Performance

SAIFI

Frequency of Customer Interruptions

SAIDI

Average Number of Customer Minutes Lost

MAIFI

Outages under five minutes

CEMM

Customers Experiencing Multiple Momentaries

CEMI

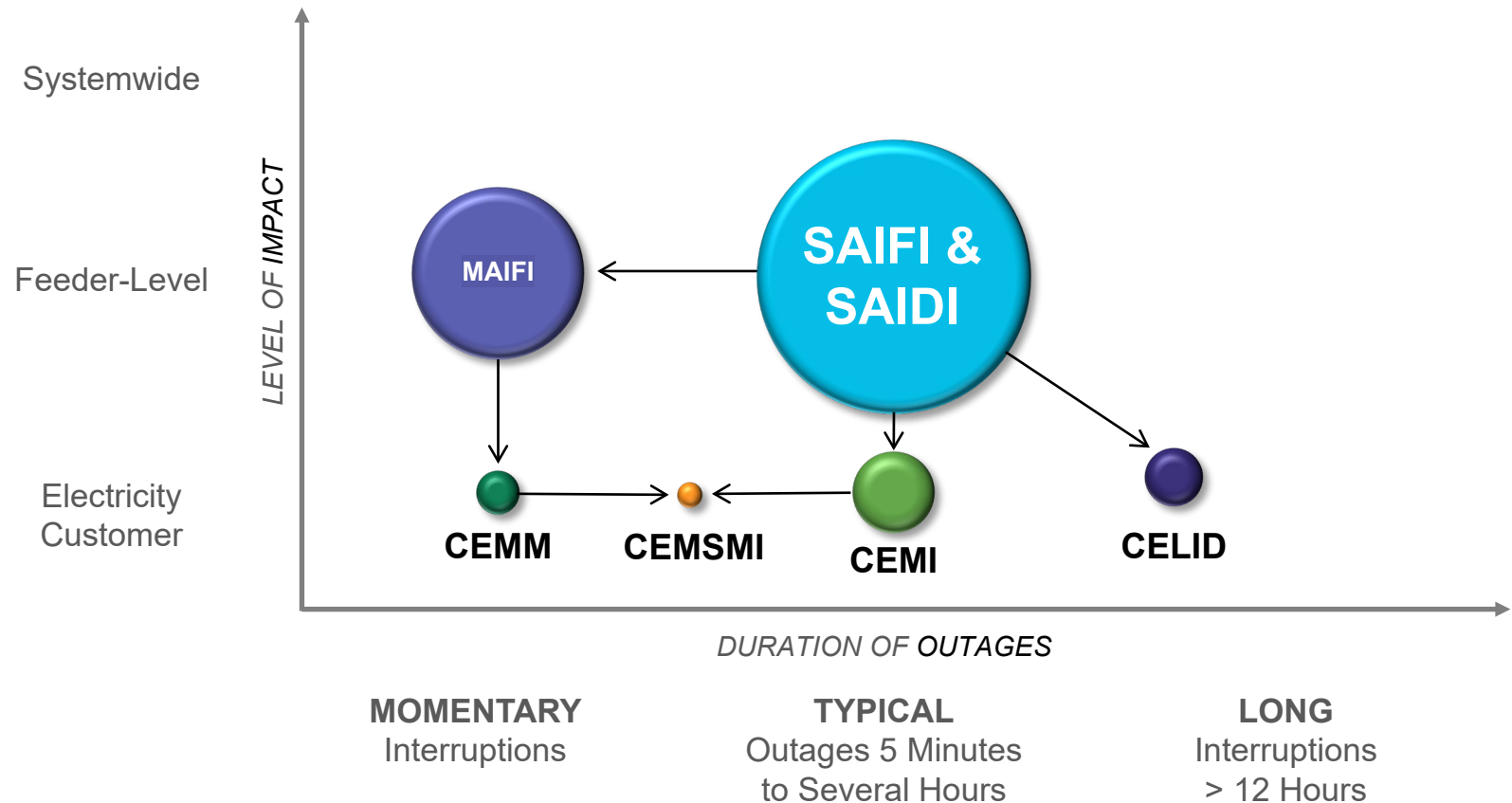
Customers Experiencing Multiple Interruptions

CELID

Customers Experiencing Long Interruption Durations

CEMSMI

Customers Experiencing Multiple Sustained and Momentary Interruptions



● *Size of Circle = Relative Level of Utility Use of this Metric*

Changing international perspective | **Lessons for Approach to 'Worst Performance'**

Different
performance
measures

Dynamic
picture

Different ways
to support



**Increasing
international
focus**

An Increased Focus on Worst-Performing Feeders



Changing
international
perspective

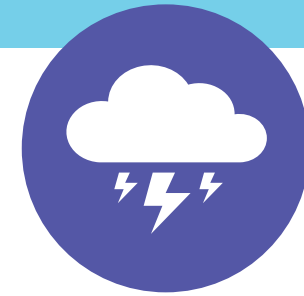


Drivers of
increased
focus



Regulatory &
technological
response

Drivers of increased focus | **Driver 1: Climate Change**

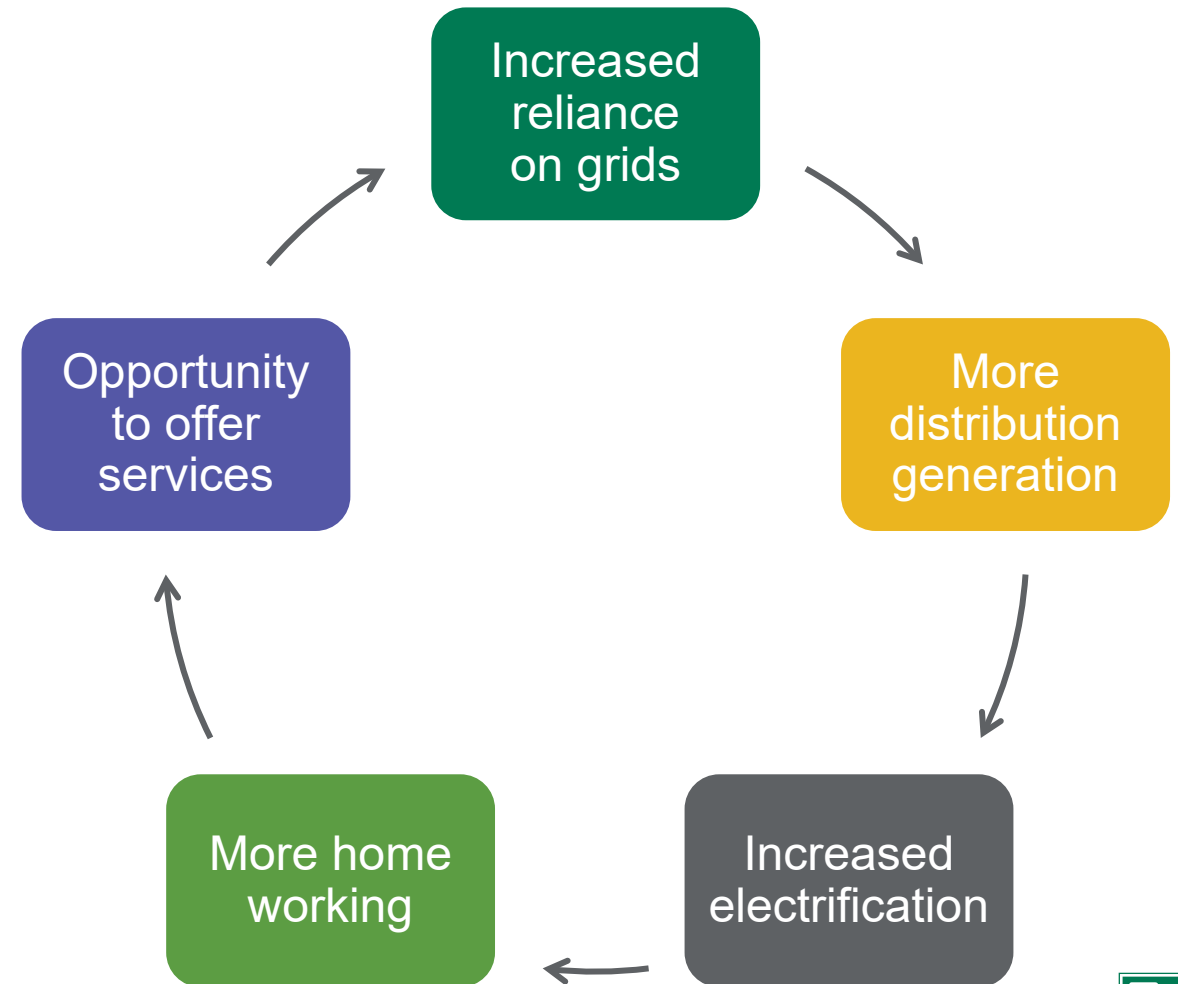


More extreme weather

Greatest impact at grid edge — 'worst-served'

Drivers of increased focus | **Driver 2: Changing Customers' Needs**

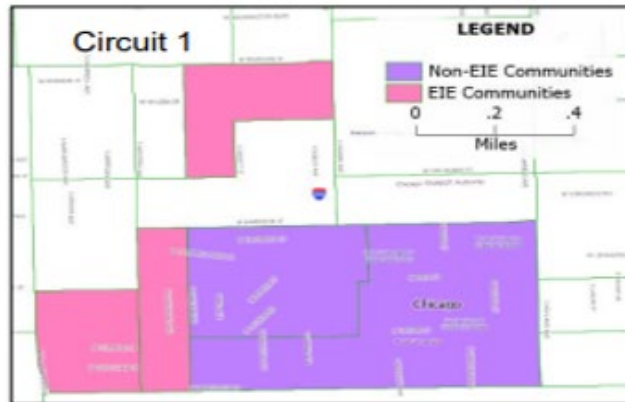
The energy **transition** means increased opportunities and challenges.



Drivers of increased focus | **Driver 3: The Importance of Equity**

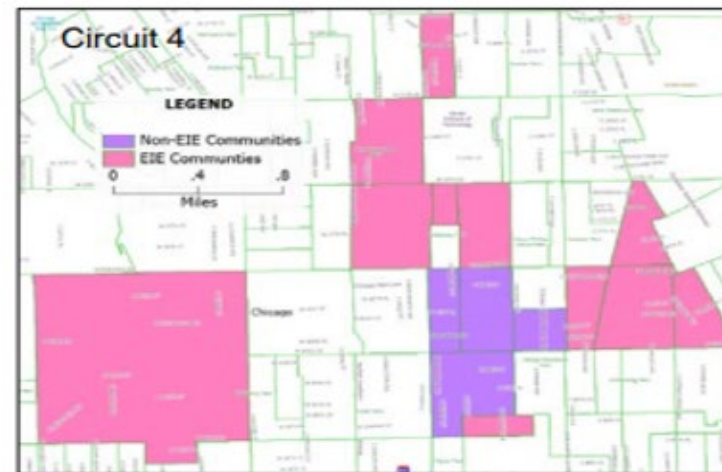
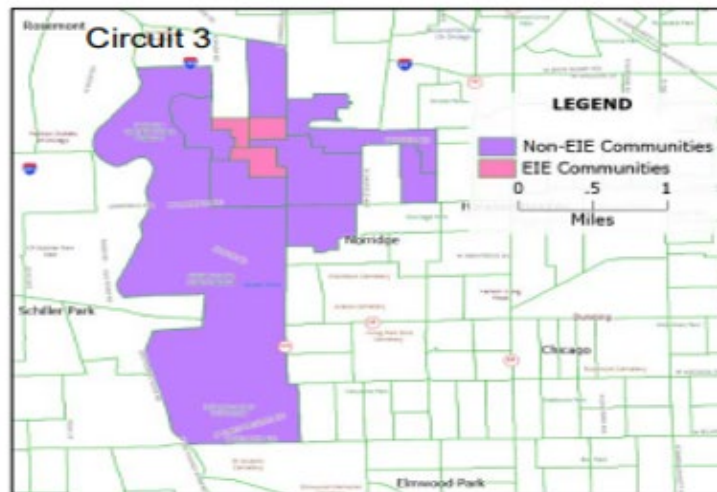
2021 ComEd Overview

***1% Worst-Performing Circuits** serve EIE and Non-EIE Communities



Non-EIE Communities
EIE Communities

Best-Performing Circuits serve EIE and Non-EIE Communities



Energy transition must support **ALL**

An Increased Focus on Worst-Performing Feeders



Changing
international
perspective

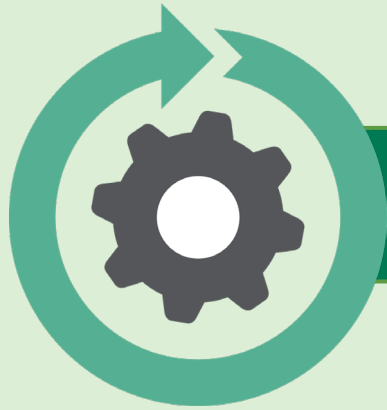


Drivers of
increased
focus



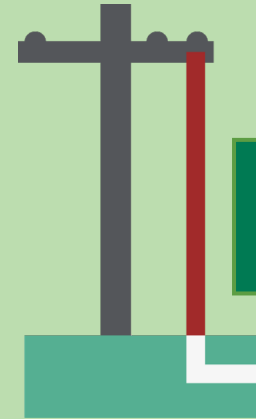
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response

Regulatory & technological response | **The Role of Technology**



Automation

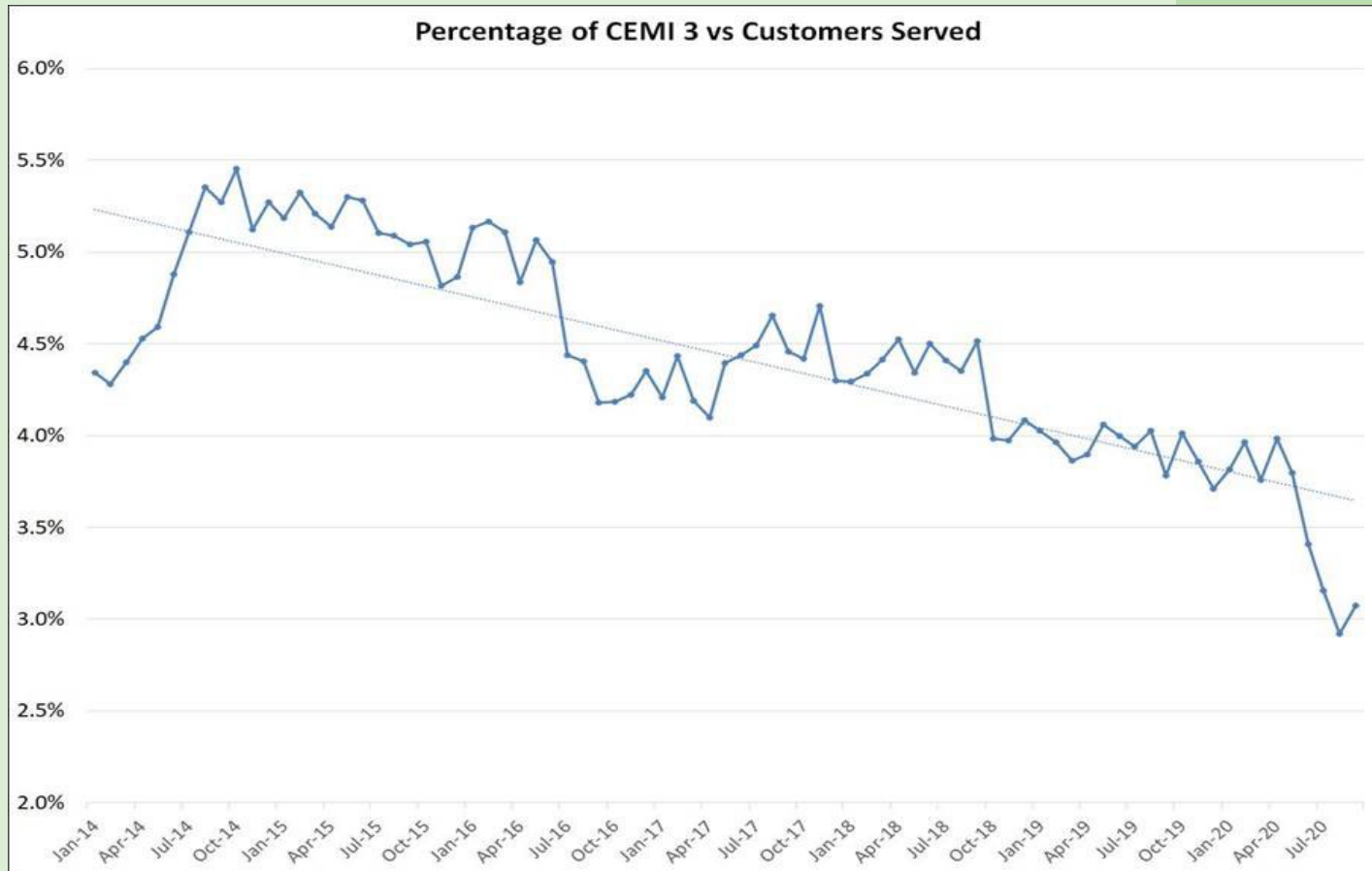
- Instant response
- Target the problem
- Grid edge focus



Undergrounding

- Enhanced protection
- More costly but...
changing economics

Regulatory & technological response | **The Role of Regulation: Refining Metrics**



- Trend to customer centered metrics
- Increased role in rate cases

FPL performance improvements in CEMI-3.

PowerUp S&C Webinar Series: "Moving Beyond Average Reliability Metrics."
(S&C Electric and FPL, November 17, 2020)





Standards

- Technical Standards
- Guaranteed Standards



Incentives

- Blue Sky Days
- Major Event Days

Regulatory & technological response | **More Focus on 'Worst-Performance' is Inevitable**



Reflects several factors –
challenges & opportunities

Regulation and technology
both play a key part

To succeed, **ALL customers
must benefit**

Thank You



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