



# CIRCULAR ECONOMY METRICS

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**EPRI**

**KEY**

**ASPECTS**



## **Nonprofit**

Chartered to serve the public benefit, with guidance from an independent advisory council.



## **Thought Leadership**

Systematically and imaginatively looking ahead to identify issues, technology gaps, and broader needs that can be addressed by the electricity sector.



## **Independent**

Objective, scientific research leading to progress in reliability, efficiency, affordability, health, safety, and the environment.



## **Scientific and Industry Expertise**

Provide expertise in technical disciplines that bring answers and solutions to electricity generation, transmission, distribution, and end use.



## **Collaborative Value**

Bring together our members and diverse scientific and technical sectors to shape and drive research and development in the electricity sector.



### Generation

- P216 GT Lifecycle Mgmt.
- P229 Mtrls. and Repairs
- P241 CCP Mgmt.
- P250 Env. Aspects of Wind
- P251 Renewables Econo.
- P252 Env. Aspects of Solar
- P255 Plant Decommissioning



### Power Distribution and Utilization

- P51 T&D Env. Issues
- P197 Env. Aspects of Fueled Distributed Generation and Energy Storage
- **P198 Strategic Sustainability Science**



### Nuclear Generation

- Welding and Repair Technology
- Remediation And Decommissioning Technology



### Low Carbon Resources Initiative

- Env. Aspects and Safety
- Power Generation
- Renewable Fuels



**Circular Economy Interest Group**



# Circular Economy Frameworks & Metrics

“A **Circular Economy (CE)** is one that is regenerative by design...”



## THE ELECTRIC POWER INDUSTRY & THE CIRCULAR ECONOMY

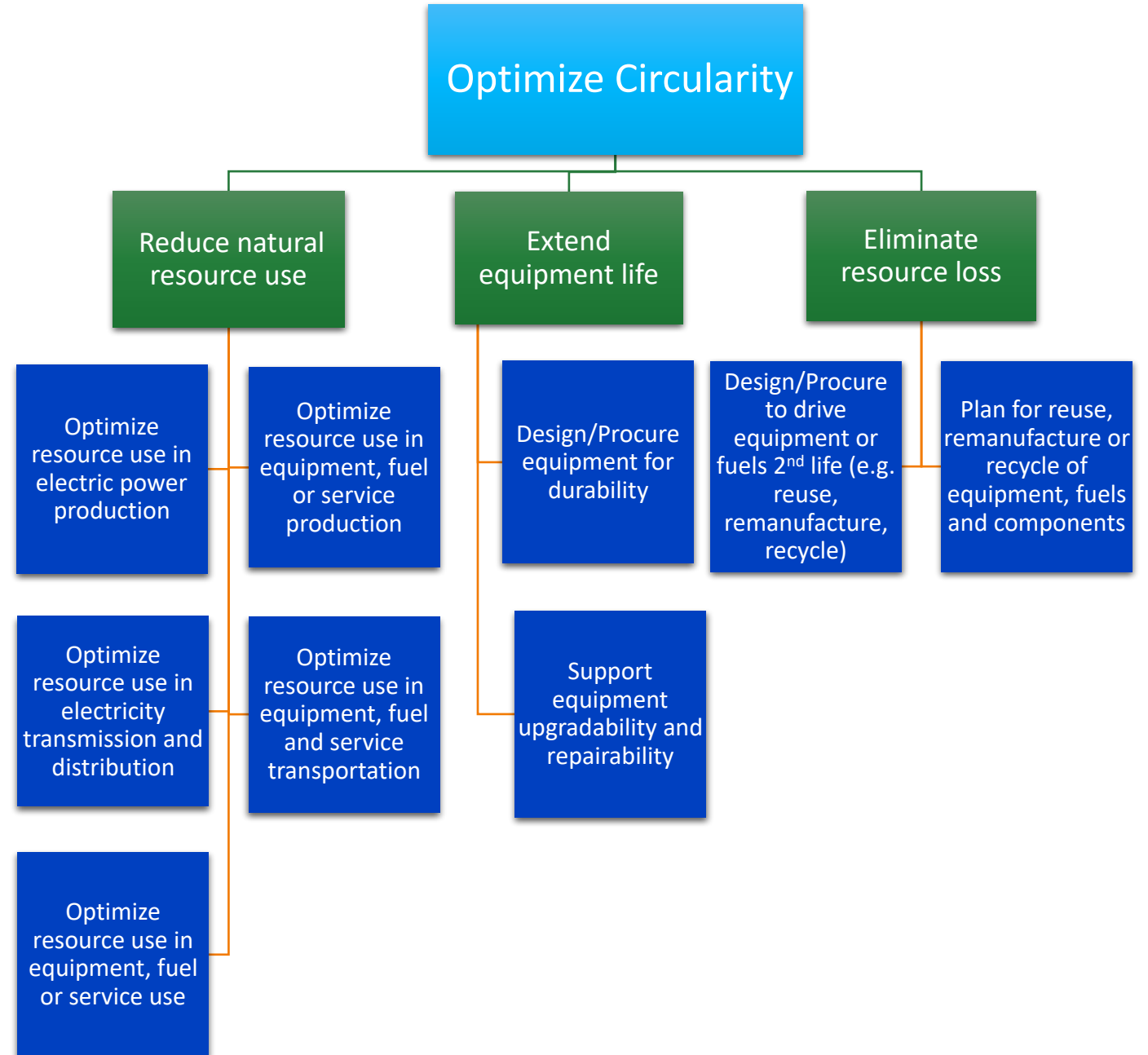
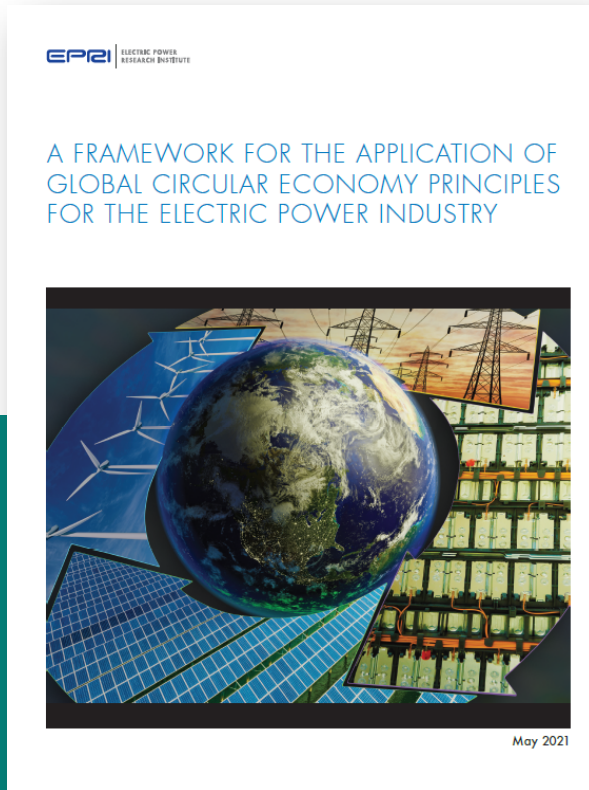
Electric power production and its efficient use across the economy

Procurement and use of significant volumes of equipment, materials, fuels, and services

Management of large volumes of materials, equipment, and fuels at the end of their initial lifespan

# How did this work begin?

EPRI's research on Global Circular Economy Principles for the Electric Power Industry identified a need for metrics research and development.



# EPRI's Strategic Sustainability Science Research



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"Sustainability Priorities for The North American Electric Power Industry: Results of 2020-2021 Research with Electric Power Companies and Stakeholders in the United States and Canada" ([3002020773](#))

# Evaluation of Circular Economy Frameworks & Metrics

Assess overlap of circular economy (CE) goals, metrics, and priorities to ground CE discussions and determine methods for tracking CE progress.

The cover of the report features the EPRI logo at the top left. Below it is a collage of images including a power line tower, a worker in a hard hat, a globe with blue energy lines, a wind turbine, and a person using a smartphone. A circular graphic on the left contains the words 'AFFORDABLE', 'CLEAN', 'RELIABLE', and 'SAFE'. The main title is 'Sustainability Priorities For The North American Electric Power Industry: Results of 2020-2021 Research With Electric Power Companies and Stakeholders in the United States and Canada'. At the bottom, it includes the ID '3002020773' and the date 'May 2021'.

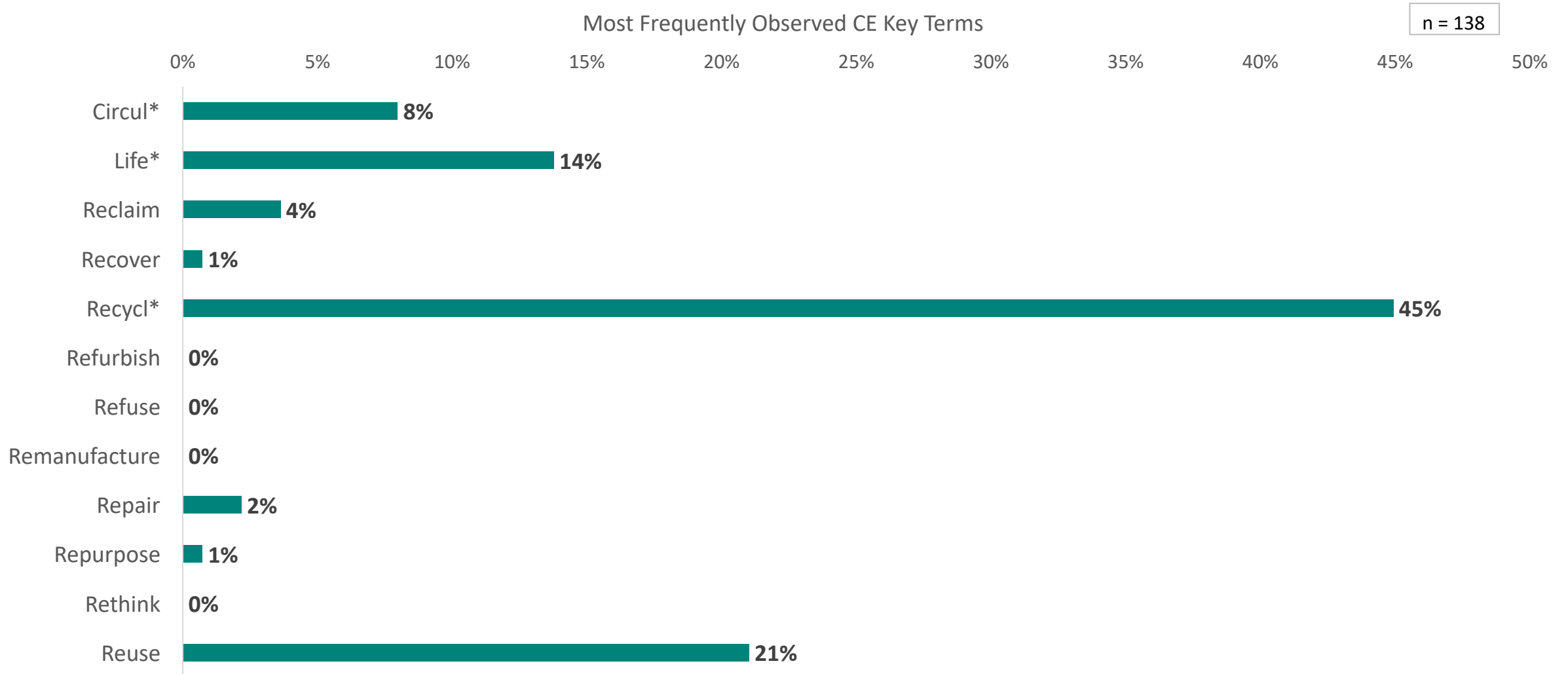
This page is titled 'Circulytics Indicators Enablers category' with a 'Reminder: This section is skipped for "Outcomes Only" submissions.' It is divided into three sections:

- Theme 1. Strategy and Planning**
  - 1a. How central is circular economy to your CEO's agenda?**
    - 0%: 1 Not mentioned in external communications
    - 33%: 2 Relevant concept (e.g. materials circulation, a new business model that follows the principles of circular economy, acknowledging that the solution is not just resource efficiency) mentioned in the past 12 months, in external communications
    - 67%: 3 Circular economy mentioned explicitly as a strategic priority once in the past 12 months, in external communications
    - 100%: 4 Circular economy mentioned explicitly as a strategic priority multiple times in the past 12 months, in external communications
  - 1b. Does your organisational risk management include risks and opportunities related to the transition to a circular economy, and the risks of staying in a linear economy?**
    - 0%: 1 No
    - 33%: 2 Yes for some parts of the organisation
    - 67%: 3 Yes for majority of the organisation
    - 100%: 4 Yes for the entire organisation
  - 1c. Is your strategy aligned with becoming more circular?**
    - 0%: 1 No relevant mentions of circular economy
    - 67%: 2 Relevant concept (e.g. materials circulation, new business models that follow the principles of circular economy, not just resource efficiency) mentioned as part of strategic priorities
    - 100%: 3 Circular economy explicitly mentioned as part of strategic priorities

The cover features the wbcSD logo at the top right. The main title is 'CIRCULAR TRANSITION INDICATORS V3.0' with the subtitle 'Metrics for business, by business'. The background is a circular image of a coffee machine's steam wands. At the bottom right, it says 'Powered by KPMG'.



# Most Frequently Observed CE Key Terms within EPRI Sustainability Research



**Recycl\* was the most frequently observed CE key term**

# Circular Economy Research Terms

## Circul\*

- Calculating costs or emissions saved because of circularity initiatives
- Focus on suppliers' involvement in the CE initiative
  - Highlights that circularity initiatives are considered throughout the value chain of an electric power company

## Life\*

- Predominately related to Scope 3 emissions

## Recycl\*

- Many of the metrics that include the term “Recycl\*” are broader material-flow or waste diversion metrics, such as “Scrap metal recycled.” However, some metrics specifically state the material that would be recycled and the source of the recycled material:
  - E.g., “Amount of scrap iron, aluminum, and copper recycled from conductors, steel, meters, transformer oil, and miscellaneous material,” “Number of wind turbine blades recycled,”

## Repair

- Many of these metrics directly cite repairing energy equipment
  - E.g., “Number of utility poles, transformers, and other equipment replaced during repairs process of a specified length of wire”

# Challenges with Material Flow Metrics...



Decisions on capital investments take decades to change outflow metrics.

The present ability of utilities to influence inflow metrics is constrained by available materials and equipment.

Material flow metrics are generally proportional and don't necessarily capture changes to total material use.

# Engage with EPRI!



EPRI Environment & Sustainability Website



Research updates, job postings, and more on LinkedIn!

Full Text: [Circular Economy Metrics for the Electric Power Industry \(3002025718\)](#)



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