



VPPAs as part of a comprehensive energy strategy

Karen Cecil, Director
Environmental Sustainability

September 18, 2019

Cummins at a glance

190

Countries & territories

62,610

Global employees

1.5M+

Engines built in 2018

8,000

Wholly-owned &
independent
distributor & dealer
locations

\$894M

Invested in research
& development in
2018

100

Years of industry
leadership

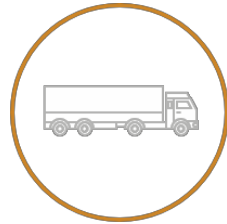
"We believe that our survival in the very long run is as dependent upon responsible citizenship in our communities and in the society, as it is in responsible technological, financial and production performance."

- - J Irwin Miller
Former Chairman and CEO
1972



Our Mission: Making people's lives better by powering a more prosperous world

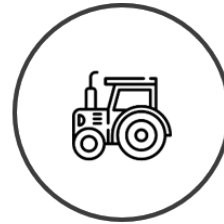
Our Vision:
Innovating for our customers to power their success



Heavy-duty Truck



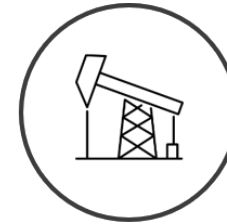
Medium-duty Truck & Bus



Agriculture



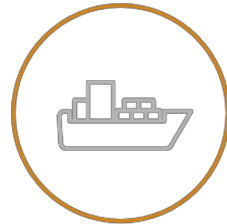
Construction



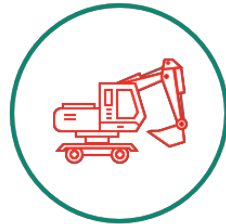
Oil & Gas



Fire & Emergency



Marine



Mining



Light-duty Automotive & Recreational Vehicle



Defense



Power Generation



Rail

Powering work in a more sustainable way

Cummins environmental sustainability targets

TO ACHIEVE BY

2020

**3.5
million**

Metric tons of carbon dioxide (CO₂) reduced annually through fuel efficiency gains from products in use.

32%

Energy intensity reduction in facilities, adjusted by hours worked.

50%

Reduction in direct water use intensity, adjusted by hours worked, with 15 sites achieving Water Neutrality.

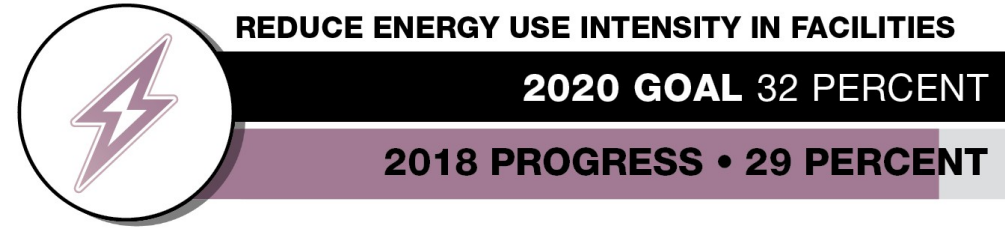
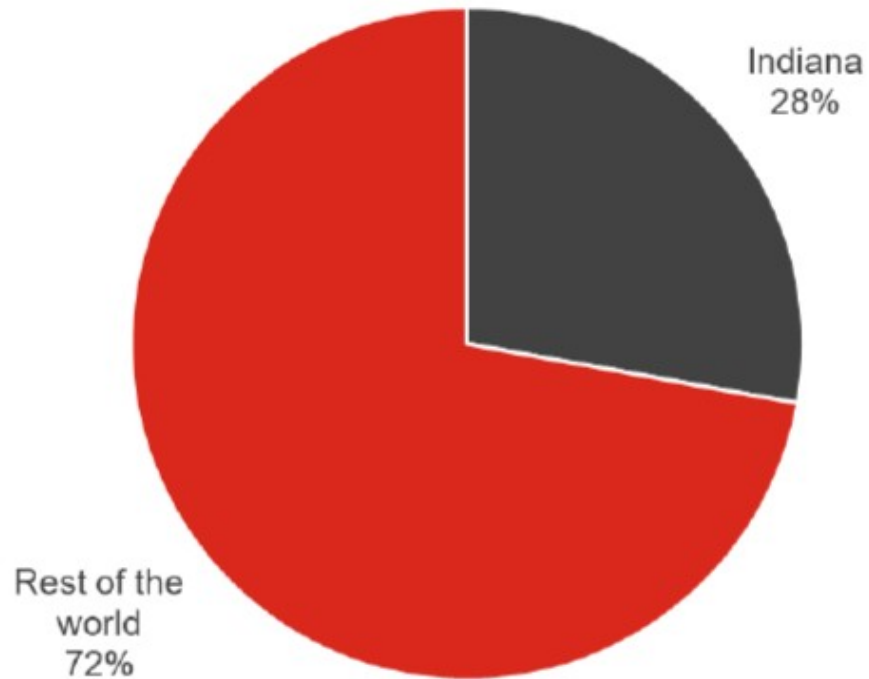
95%

Company-wide facility recycling rate with 30 sites achieving Zero Disposal status.

10%

Reduction in CO₂ per KG of company goods shipped annually

Cummins energy footprint and goal



Reduce GHG emissions through:

Energy
efficiency

Renewable
energy

Cummins renewable energy portfolio



Onsite owned (11 projects, 0.5%)



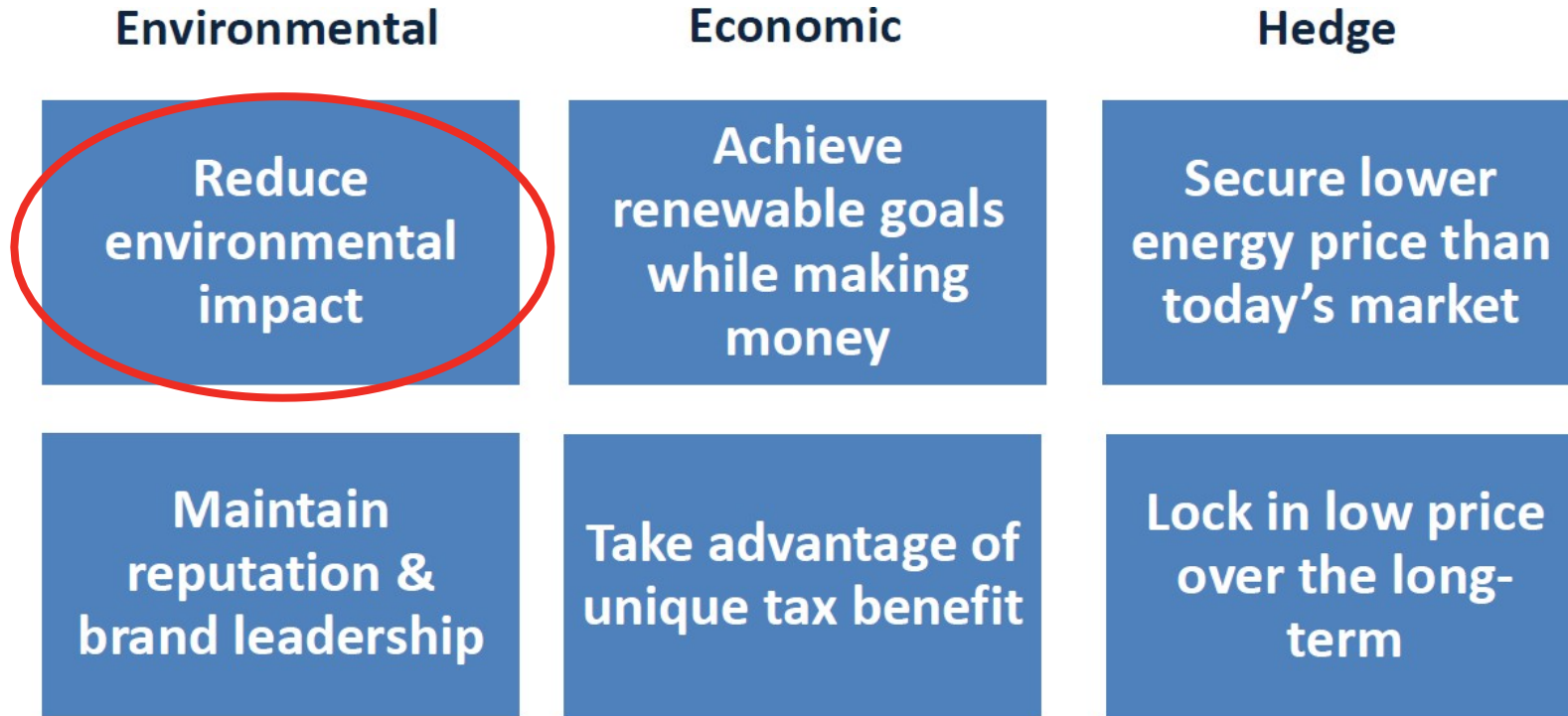
Onsite PPA (3 projects, 1.1%)



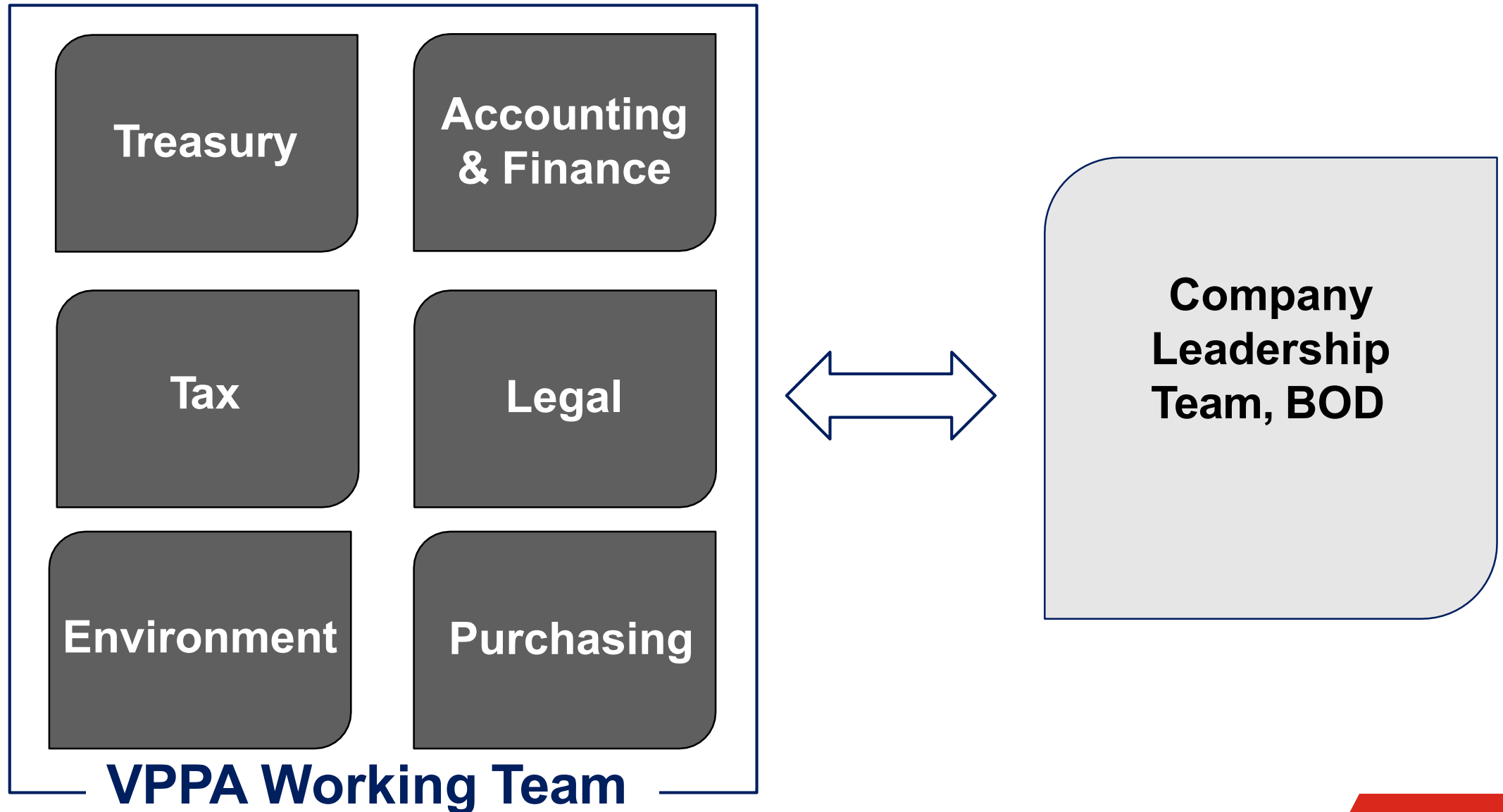
Guiding principles:

- *Additional*
- *Tangible*
- *Cost effective*
- *Transparent*

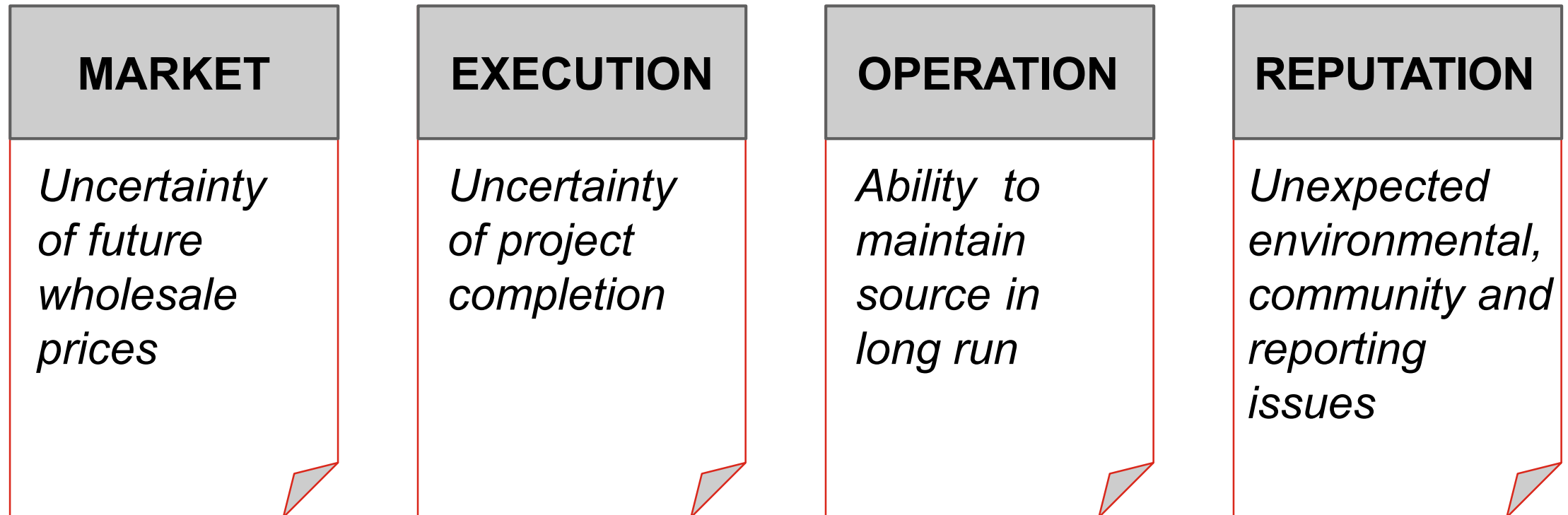
Primary PPA drivers



Internal Stakeholder Engagement

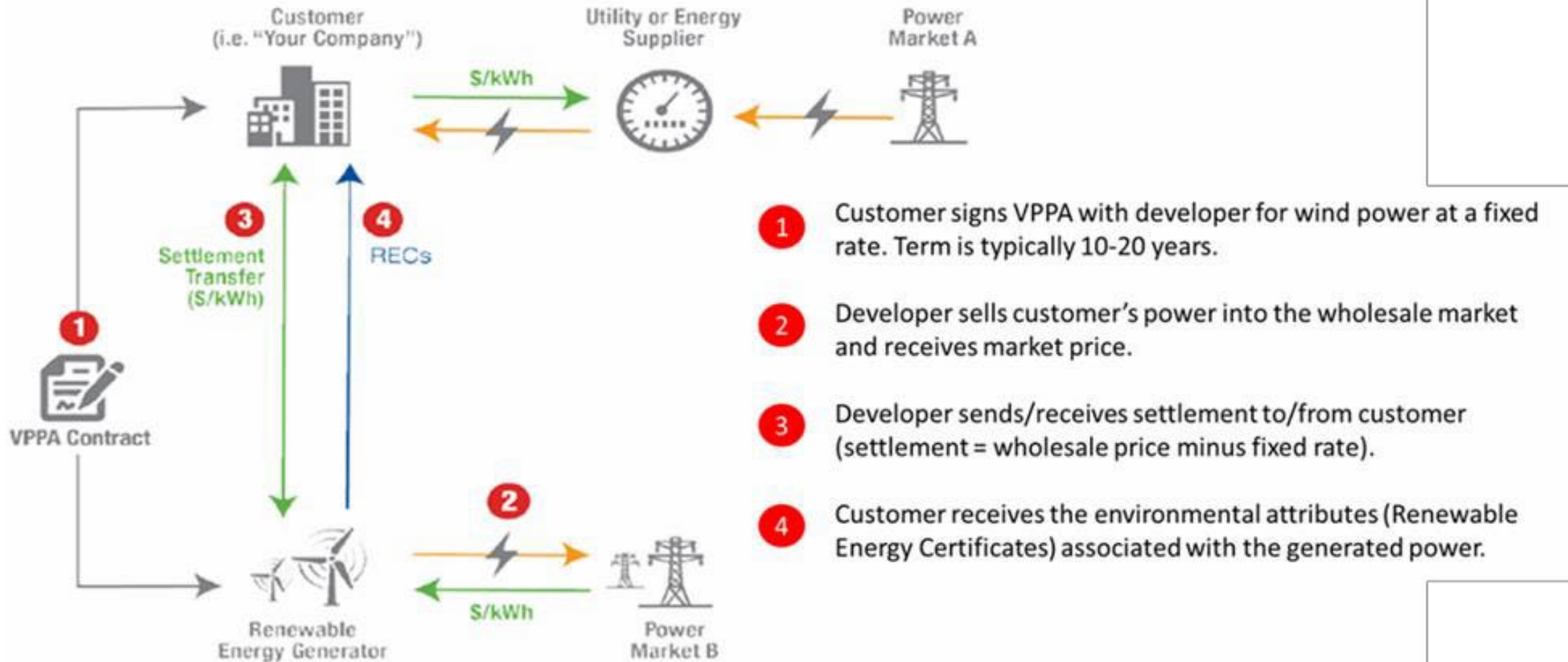


Potential VPPA Risks



Identified risks can be mitigated in various ways
(i.e. project developer, contract negotiation)

Virtual power purchase agreements



Favorable Winds Behind Cummins Strategy to Expand Low Carbon Energy



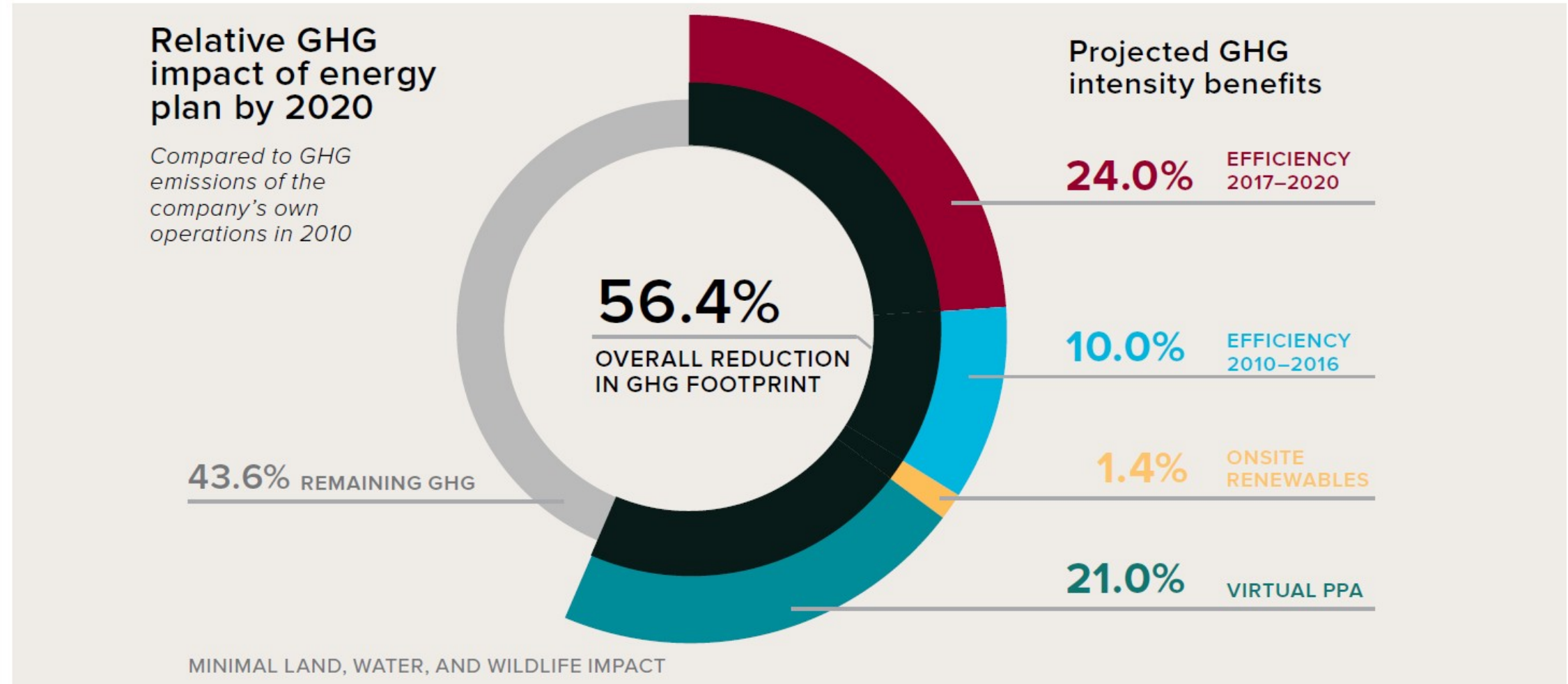
Cummins Indiana VPPA

- 75 MW
- 262,000 MWh/year
- 26% global electricity
- 165,000 MTCO₂e/year

The company's share of the energy generated by the expansion's 61 wind turbines is more than Cummins uses at all of its Indiana facilities.



Projected GHG reduction effect of our energy efficiency initiatives, 2010-2020

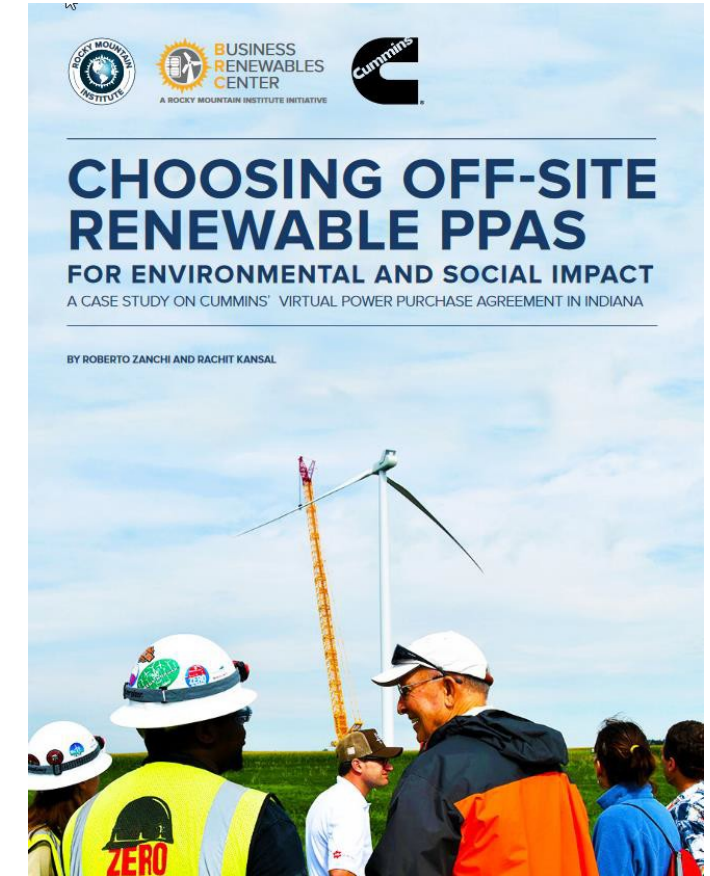


Cummins VPPA case study

- Alignment with company principles and goals
- Cost-benefit analysis
- Risk mitigation approach



Risk	Initial	Final	Definition
Market (Price) Risk	Red	Yellow	Potential that market costs drop below our contract price
Negative Price Risk	Red	Green	Developer sells into market at a negative price, which may be incentivized by tax credits
Accounting Risk	Yellow	Green	Triggers unwanted accounting treatments
Legal risk	Yellow	Green	Legal liabilities arising from contract and operation of the wind farm
Reputational risk	Yellow	Green	NIMBY issues; any negative backlash associated with the operation of the selected project
Environmental risk	Yellow	Green	Potential harm to wildlife, sensitive habitat, etc.
Execution and operational risk	Green	Green	Project delays, cancellations and/or poor performance



<https://www.rmi.org/wp-content/uploads/2018/10/Choosing-Off-site-Renewable-PPAs.pdf>



1919-2019

CHALLENGE
THE IMPOSSIBLE



TM