



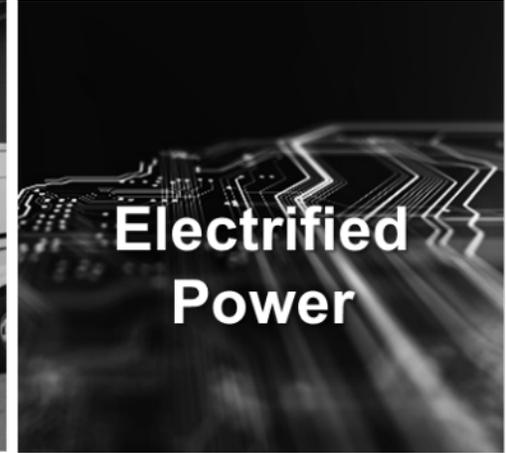
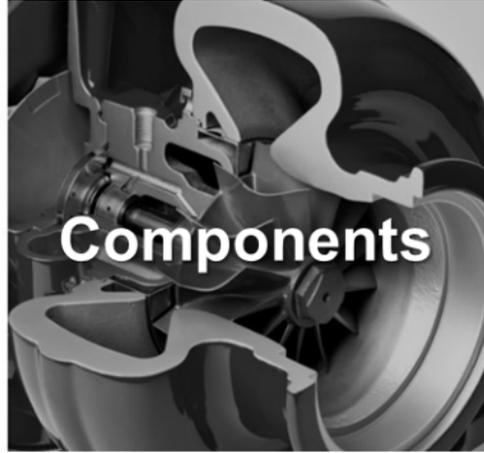
A portfolio approach to renewable energy

WEEC – Charlotte, NC

Mark Dhennin

October 19, 2018

This is Cummins



- Founded in 1919 – Columbus, IN
- 58,600 global employees
- \$20.4B sales in 2017
- 104 manufacturing plants
- Tech centers, warehouses, offices
- 600 distributors, 6000 dealers



Why we act

BY 2030...

55% MORE MATERIAL EXTRACTION

30% MORE ENERGY

40% MORE FRESH WATER

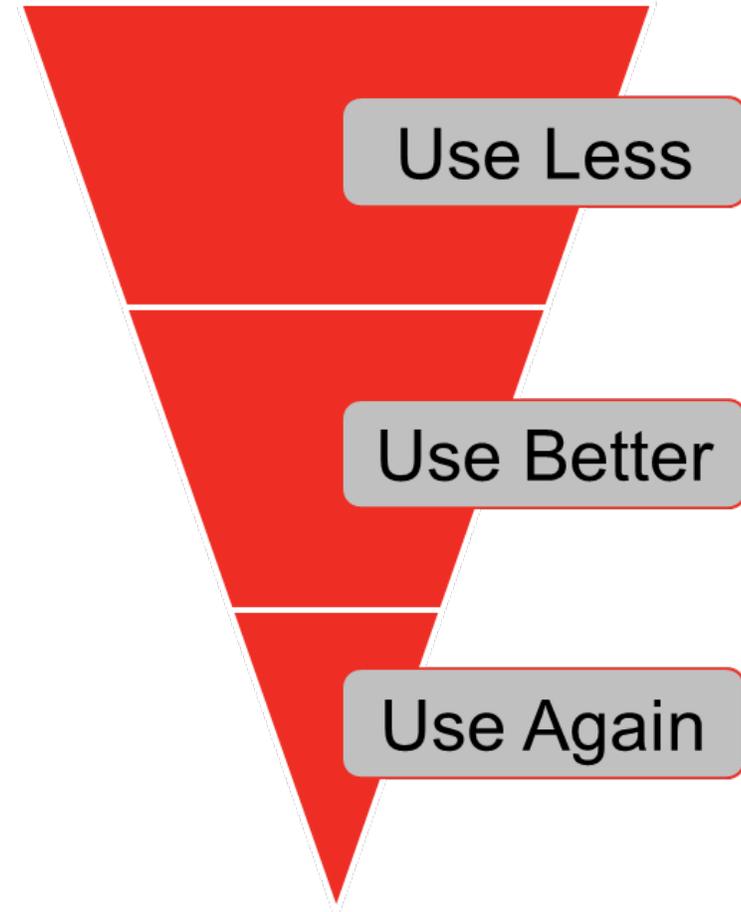
45% OF CUMMINS OPERATIONS ARE IN WATER STRESSED AREAS

UNEVEN REGULATORY ENFORCEMENT

REAL BUSINESS EFFECTS
Inability to sell products • supply chain disruption • material price volatility • competition for metals and minerals • community distress

Cummins Eco-Efficiency Principles

- Use Less, Use Better, Use Again hierarchy
- Systemic thinking
- Risk & science-based prioritization
 - *Additional*
 - *Tangible*
 - *Cost effective*
 - *Transparent*



Energy footprint & goal

Global footprint – 2017

991,300,000
kWh electricity

12,840,000
gallons diesel fuel

1,585,000,000
cubic feet natural
gas

\$150 million
total energy
spend

806,200
metric tons
CO₂e
emissions



REDUCE ENERGY USE INTENSITY IN FACILITIES

2020 GOAL 32 PERCENT

2017 PROGRESS • 25 PERCENT

Reduce GHG emissions through:

Energy
efficiency

Renewable
energy

Cummins renewable energy portfolio



Onsite owned



Onsite PPA



Offsite PPA

Guiding principles:

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

Cummins onsite renewable energy

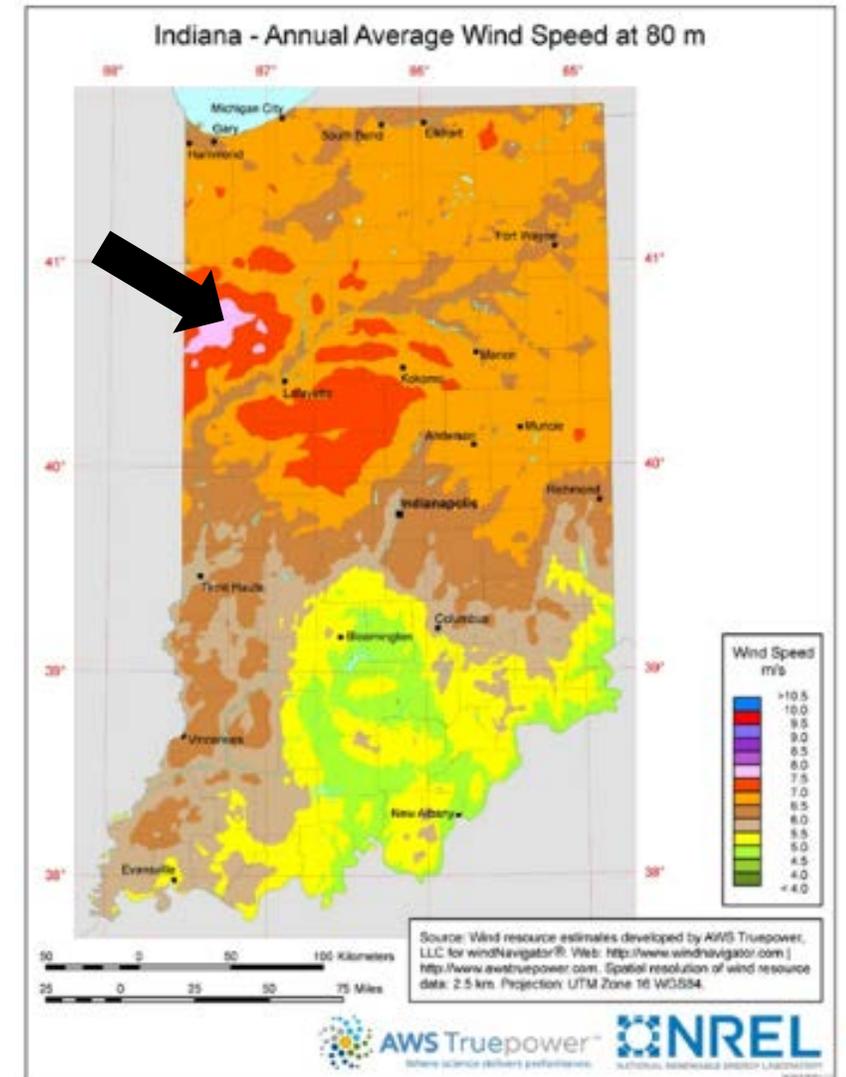


Virtual Power Purchase Agreement (VPPA)



Meadow Lake VI VPPA:

- 75 MW wind farm expansion
- 262,000 MWh/yr
- 165,000 MTCO₂e/yr

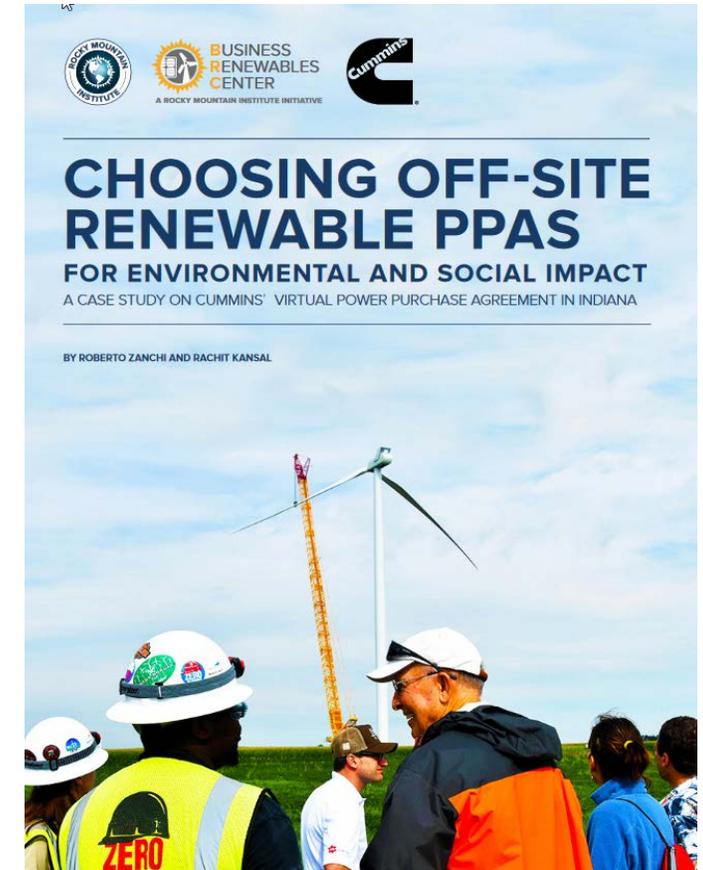


Cummins VPPA case study

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



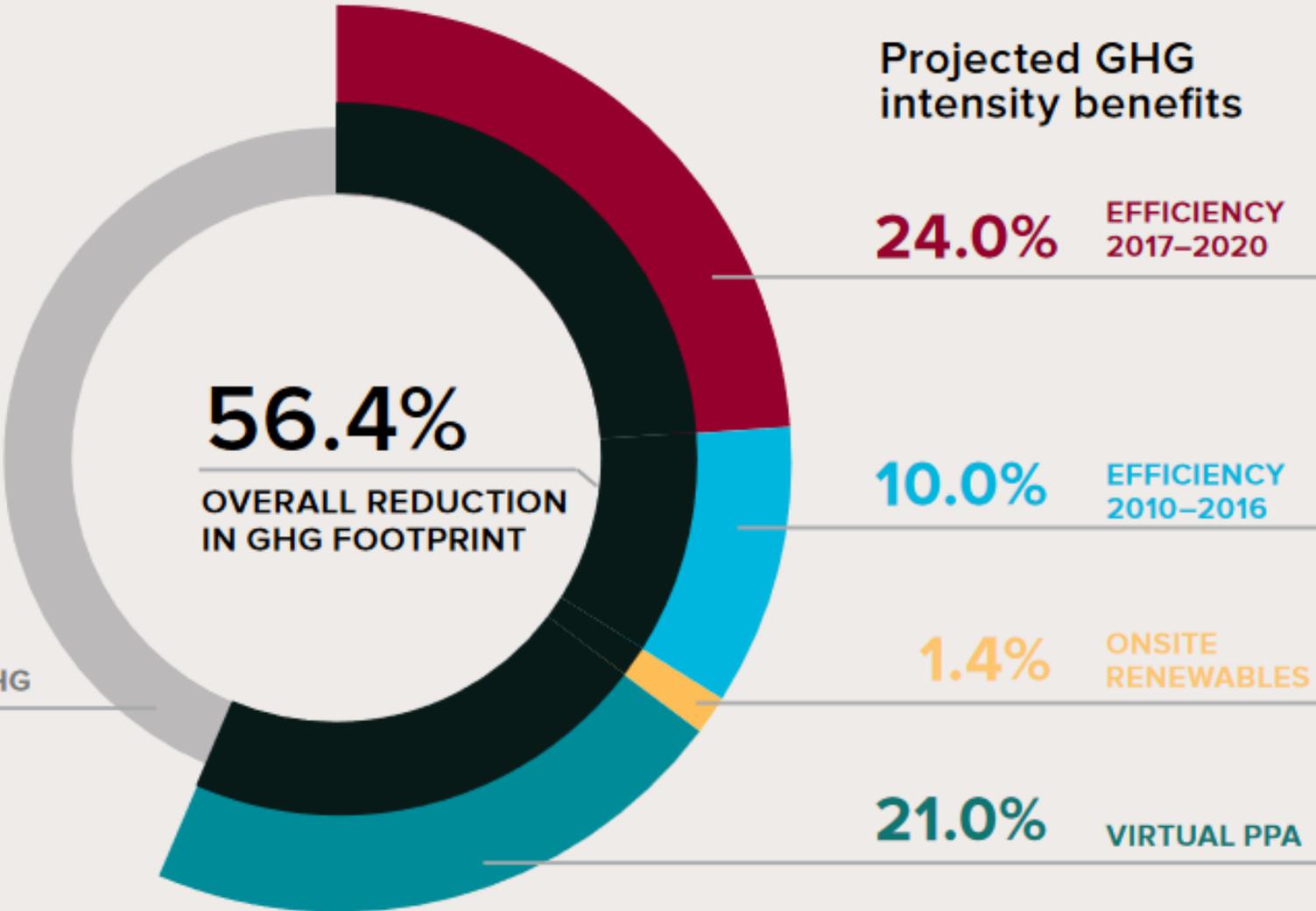
Risk	Initial	Final	Definition
Market (Price) Risk	Red	Yellow	Potential that market costs drop below our contract price
Negative Price Risk	Red	Green	Developer sells into market at a negative price, which may be incentivized by tax credits
Accounting Risk	Yellow	Green	Triggers unwanted accounting treatments
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>

Relative GHG impact of energy plan by 2020

Compared to GHG emissions of the company's own operations in 2010



MINIMAL LAND, WATER, AND WILDLIFE IMPACT

What's next...



Q+A

