



2021 Grid of the Future Symposium

Embracing Carbon Abatement in Concrete for the Construction of Electrical Utility Networks

October 19, 2021

Presented By:

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BURNS  MCDONNELLSM

Burns & McDonnell Lineup



**Improving Grid Infrastructure Sustainability by BIM and
Optioneering Design Approach**
Yesterday!
Lyndsay Covert



**Impact of Extreme Events on Electrical Substation
Infrastructure in Coastal Areas**
Right before me!
Connor Bowen



**Embracing Carbon Abatement in Concrete for the Construction
of Electrical Utility Networks**
NOW!
Alex Pagnotta

As humans, we face a challenge.

- Warming of our climate system is occurring due to human activities that produce accumulating greenhouse gasses in our atmosphere.
- This human influence has led to increased frequency/intensity of extreme events:
 - Extreme Precipitation
 - Droughts
 - Tropical Cyclones
 - Fire Weather



There IS Hope!

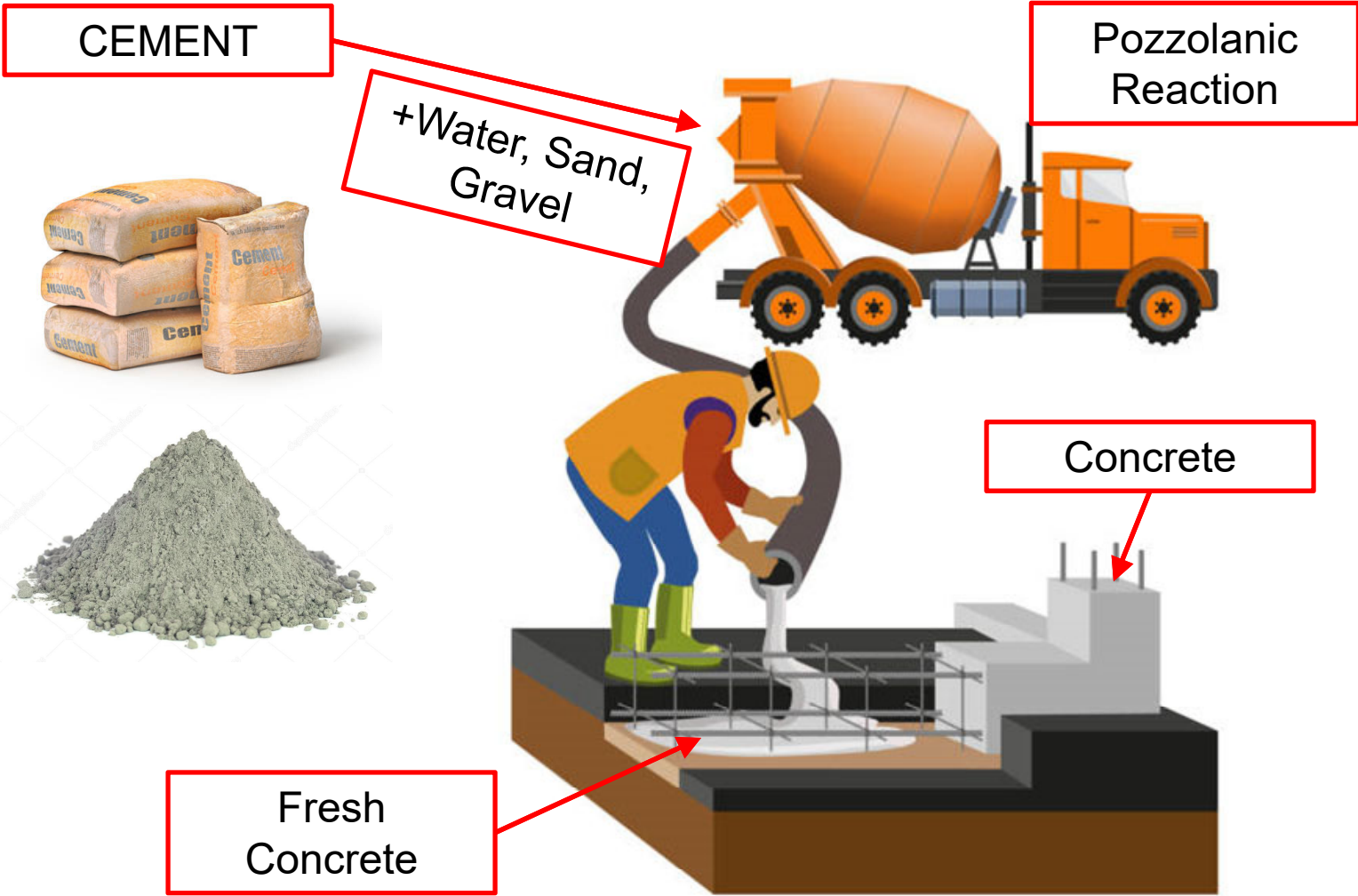
CONCRETE

Outline

- Carbon Impact of Cement Production
- Emerging Tech in Carbon Abatement
- Our Role in Implementing Emerging Tech
- Summary
- Q&A

Clarification – Concrete v. Cement

- Carbon Impact
- Carbon Abatement
- Our Role
- Summary
- Q&A



How does cement production work?

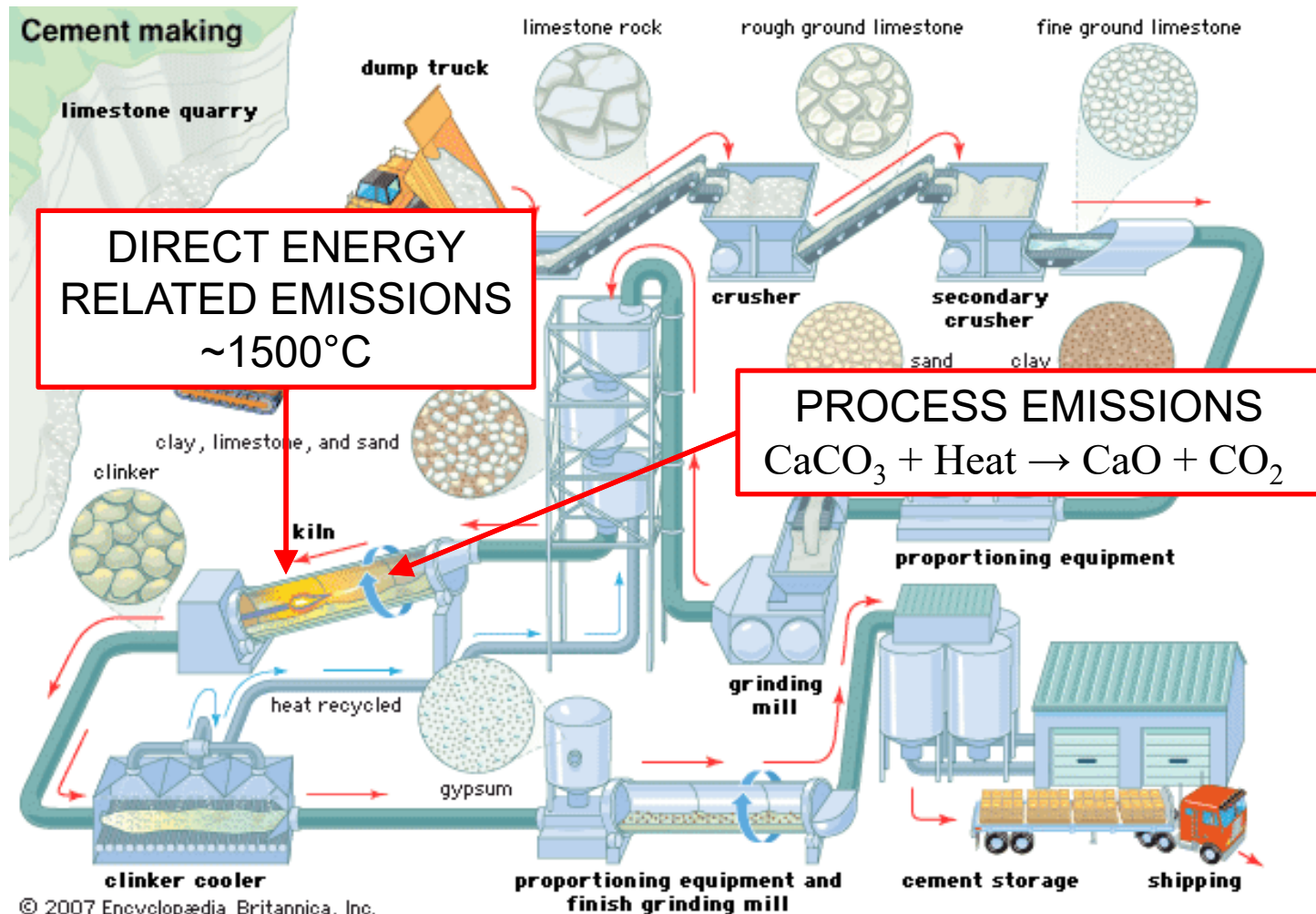
Carbon Impact

Carbon Abatement

Our Role

Summary

Q&A



How do cement emissions compare?

Carbon Impact

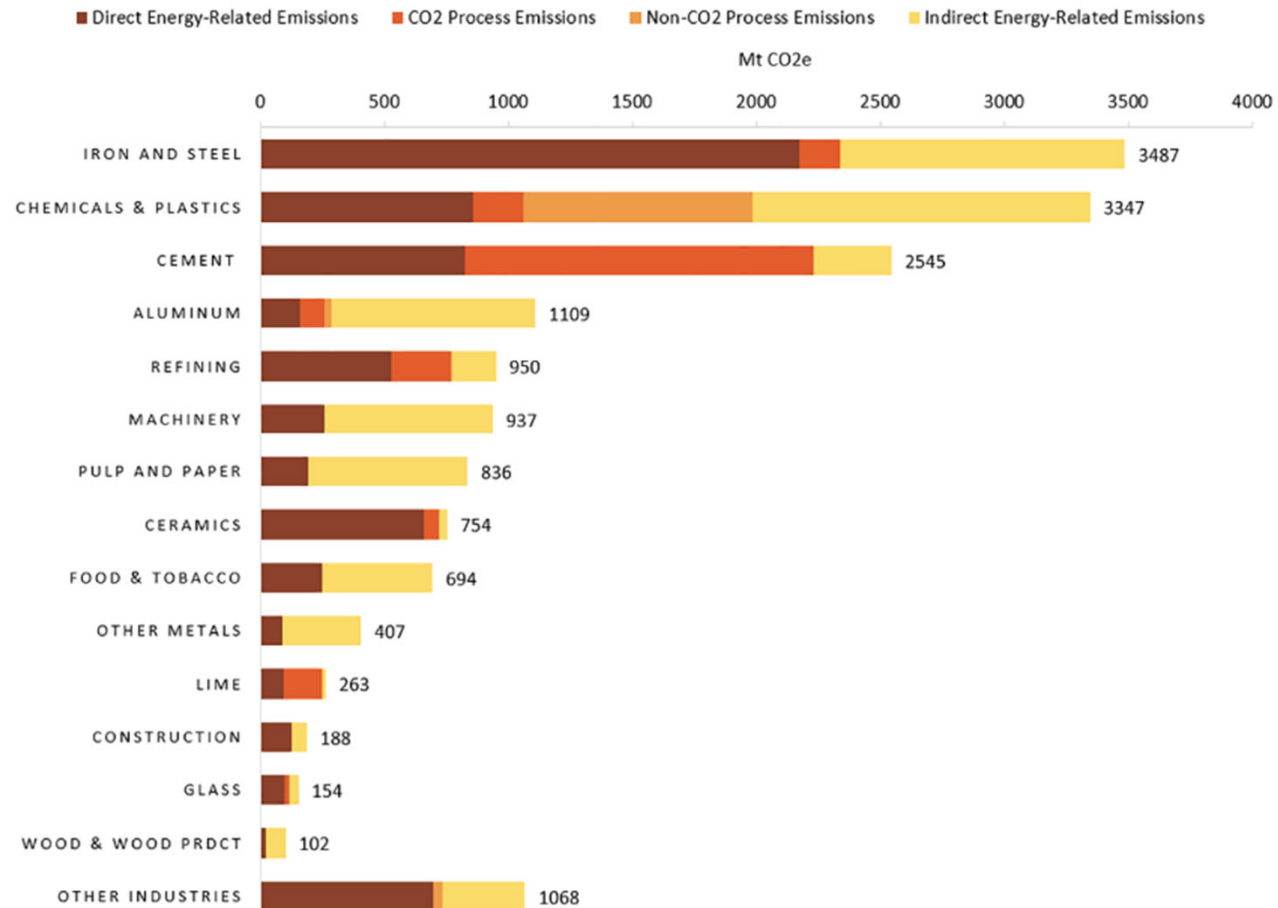
Carbon Abatement

Our Role

Summary

Q&A

GLOBAL GHG EMISSIONS BY INDUSTRY IN 2014



“Green” “Low-carbon” “Sustainable”

Carbon
Impact

Carbon
Abatement

Our Role

Summary

Q&A



THIS SLIDE IS NOT AN
ENDORSEMENT OF ANY
CEMENT, CONCRETE, OR
ADMIXTURE THAT IS
ADVERTISED AS GREEN / LOW
CARBON / SUSTAINABLE

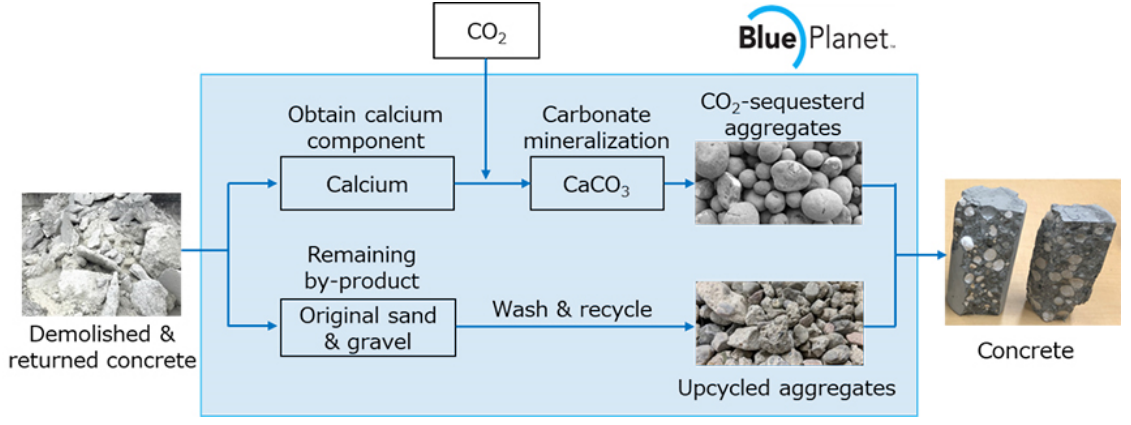
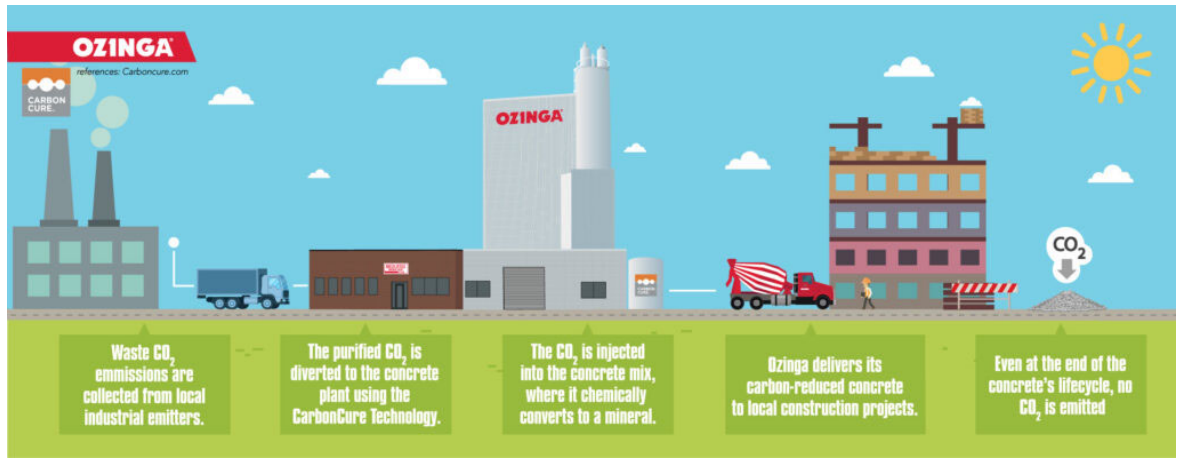


A few highlights

- Carbon Impact
- Carbon Abatement
- Our Role
- Summary
- Q&A



Carbon Cure
CarbonCure
CarbonCure



Is the power grid right for new tech?

Carbon
Impact

Carbon
Abatement

Our Role

Summary

Q&A

- Utilities are already pledging to decarbonize
- Utilities are involved in supplier diversity / racial equity efforts
- Redundancies in transmission networks
- Monolithic vs polyolithic/modular construction

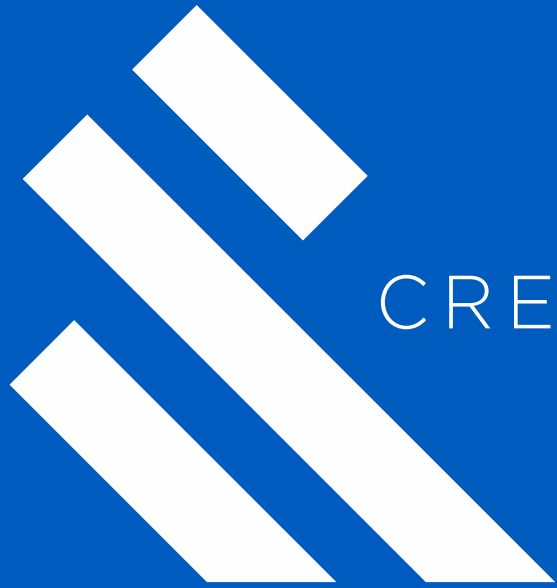


Summary

If you have a great idea for a new cement chemistry and you bring that to a contractor or a structural engineer, there's a good chance that the response you're going to get is "Oh, that's super interesting! Why don't you build YOUR bridge out of it and come back in forty years and we'll take a look at how the bridge looks and then we'll talk."

-Rebecca Dell / Industry Program Director / ClimateWorks Foundation

The risk associated with uncertainty in the performance of novel construction materials is more so assumed by engineers and contractors, and less so by the material producers. As engineers, contractors, and owners, we must recognize that we do not have 40 years to wait and "take a look" and then talk. We have an obligation to ourselves and future generations to familiarize ourselves with novel products that might be beneficial to fighting climate change so that we can better understand the risks, accept them, and begin to specify low carbon alternatives now.



CREATE AMAZING.

A large blue circle containing the white text "Q&A" in a bold, sans-serif font. The background of the slide features faint, white, stylized architectural drawings of buildings and structural frames.

Q&A