Market Transformation for Cement and Concrete
Innovation theory

Are we thinking linearly? - change the optics

- CO2 impact from non-required performance
- New technologies have increased OPC performance gap
A direct route to decarbonation of concrete is to improve/reduce the embedded CO₂ in the binder content.

Cement (or binder mix) is a small share of concrete... but accounts for close to 96% of its CO₂ emissions.

- Reduction of concrete related emissions starts with active reduction of cement/clinker/binder emissions.
- Multiple strategies are available to reduce emission.

Source: ETH Zurich, Karen Scrivener, Argos Research, LC3
Calcined clays have immediate potential to reduce CO₂ emissions in concrete by up to 40% while creating new business opportunities.

**Comparison of constituent materials of OPC vs. Calcined Clay blend**

**Clay potential**

- Short term 40% embedded emissions reduction
- Performance equivalent to OPC cement (chemistry synergies between limestone and calcined clays)
- Improved performance over Type IL and Type IL with FA or Slag mixed

Source: ETH Zurich, Karen Scrivener, Argos Research, LC3
What do we need to do to make it happen?

1. Adjust our xDOT standards
2. Support to reduce perceived market risk – Demonstration / Catalyst Funding
3. Evolve existing permitting processes