

ICMM  
International Council  
on Mining & Metals

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9 October 2019

# Innovation for Cleaner Safer Vehicles

## Collaborate to Accelerate

MDEC 2019  
Toronto, Ontario, Canada

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Caterpillar

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## Overview

### Contents

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- What is the ICSV program?
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- Where we are on the journey?

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## ICMM members at a glance

**ICMM**  
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With the support of over 30 regional and commodities associations.

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## What is the ICSV program?

### Innovation for Cleaner Safer Vehicles

Aims:

- Minimise the operational impact of diesel exhaust by **2025**
- Introduce greenhouse gas emission-free surface mining vehicles by **2040**
- Make collision avoidance technology available to mining companies by **2025**

Learn more: [https://www.icmm.com/en-gb/news/2018/icsv\\_pr](https://www.icmm.com/en-gb/news/2018/icsv_pr)

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## Ambition statement



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### Diesel Particulate Matter (DPM) Workstream

“Reduce emissions of diesel particulate matter (DPM). The programme will promote operational and technical innovations to minimise the impacts to underground mining operations from emissions of diesel particulate matter by 2025.”

## Understand the problem



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### Why DPM

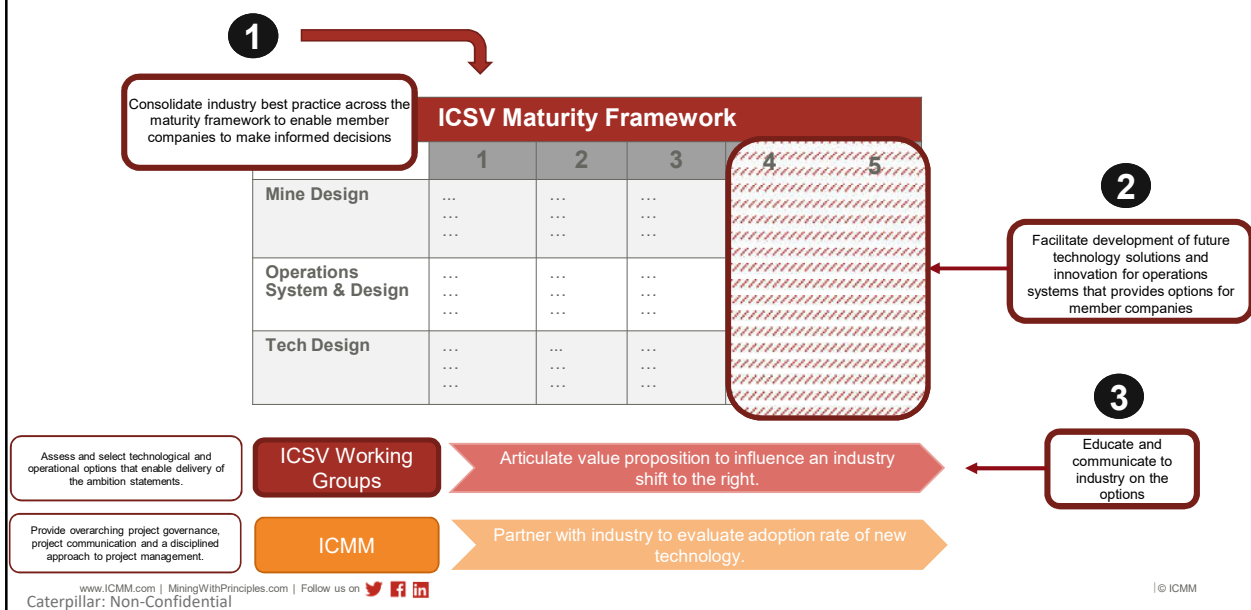
- DPM has carcinogenic potential and is classified as a Group I confirmed human carcinogen by IARC.
- Exposure to elevated DPM emissions, particularly in underground mining operations, has been linked to negative health effects.
- Although there is no common exposure standard, there is the need to continue to reduce exposure levels in line with industry best practice and available technology.
- Non-emitting DPM technologies are becoming available at a fast rate. Their incorporation to mining operations could unblock several projects that to this date were considered not feasible.

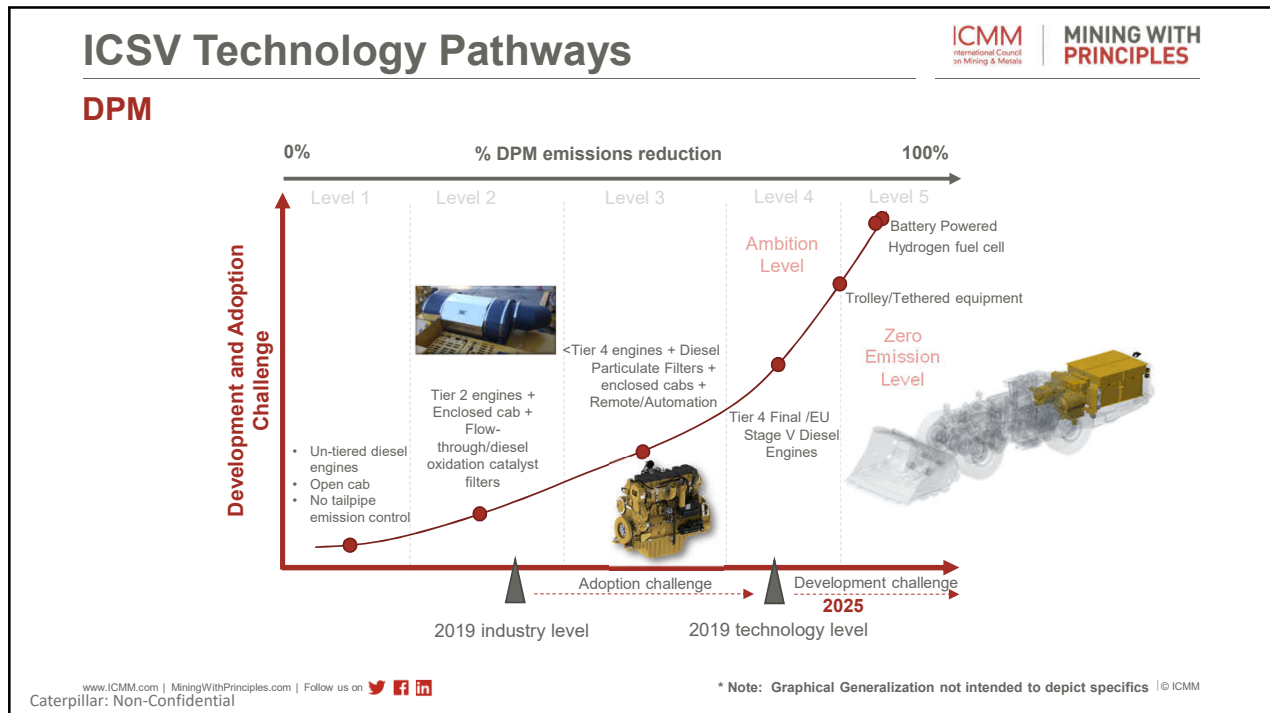
## How will we achieve this?

ICMM isn't developing the technology, we are:



- Providing the platform for **collaboration**.
- **Collating** industry information to inform OEMs.
- Developing a **knowledge hub**.
- **Accelerating** the transition through building and communicating consensus.

## ICSV – Choose your own path

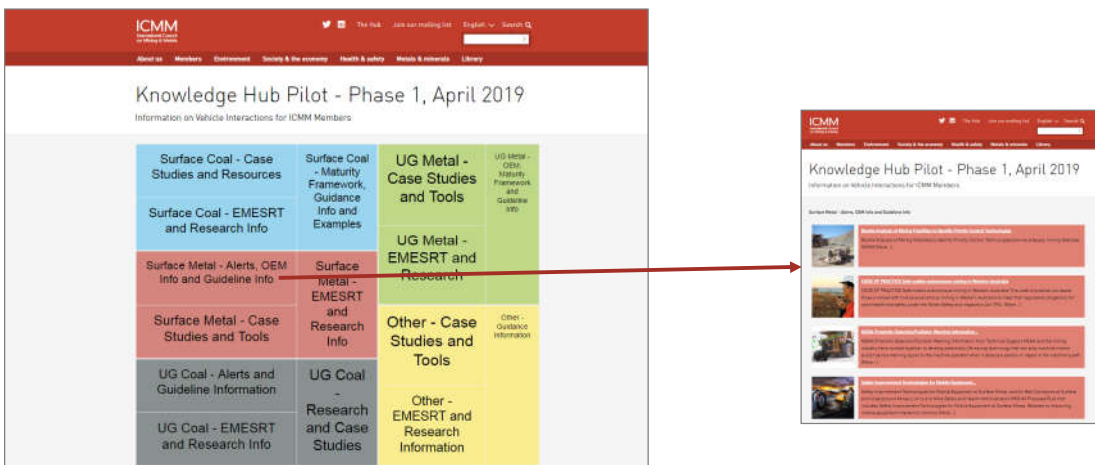




## How to Promote & Expand Reach?




### A publicly available ICSV Knowledge Hub



Knowledge Hub Pilot - Phase 1, April 2019  
 Information on Vehicle Interactions for ICMM Members

Surface Coal - Case Studies and Resources    Surface Coal - EMESRT and Research Info    Surface Metal - Alerts, OEM Info and Guideline Info    Surface Metal - Case Studies and Tools    UG Coal - Alerts and Guideline Information    UG Coal - EMESRT and Research Info    Surface Coal - Maturity Framework, Guidance Info and Examples    UG Metal - Case Studies and Tools    UG Metal - EMESRT and Research    Other - Case Studies and Tools    Other - EMESRT and Research Information

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## Where we are on the journey



### We have:

- Defined **key workstreams**, high-level roadmap & tasks.
- Established Maturity Framework to outline an industry landscape on **technological solutions**.
- Ongoing collection of **cleaner** and **non-emitting** powertrain options
- Developed a **2020 workplan**.

### We still need to:

- Identify opportunities to improve awareness of **existing** low DMP technologies.
- Technical Guidance for **maintenance** of low emission or non-emitting diesel equipment
- Define the strengths and constraints of the potential **technologies**.
- Have a thorough understanding of **fleet profiles** throughout the industry.

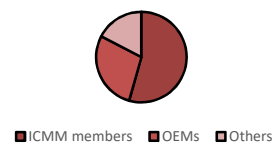
## Call to action



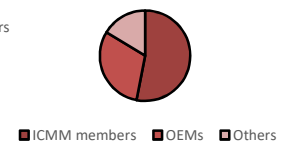
- Get in involved.
- Become a member.
- Get in touch!

<https://www.icmm.com>

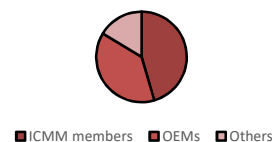
DPM Workshop



GHG Workshop



VI Workshop



**Thank you!**