



# Transmissions for Commercial Electric Vehicles

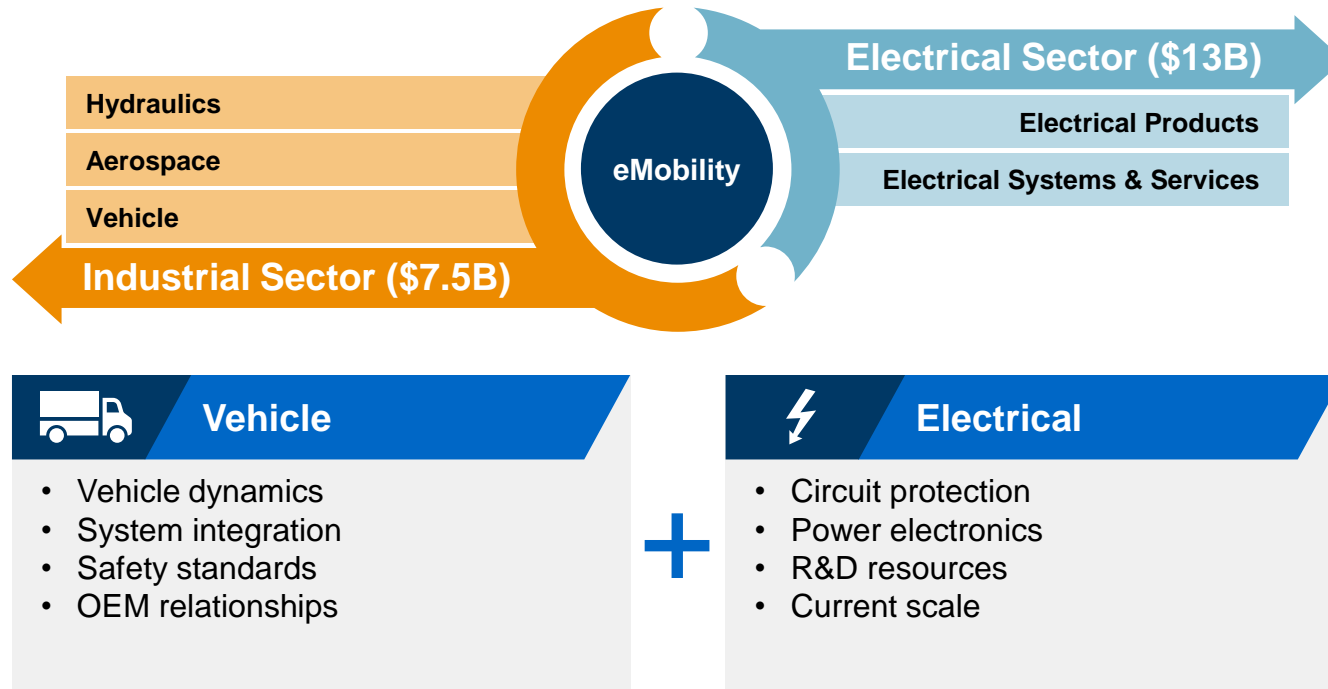
Sarah Eary, Engineering Specialist  
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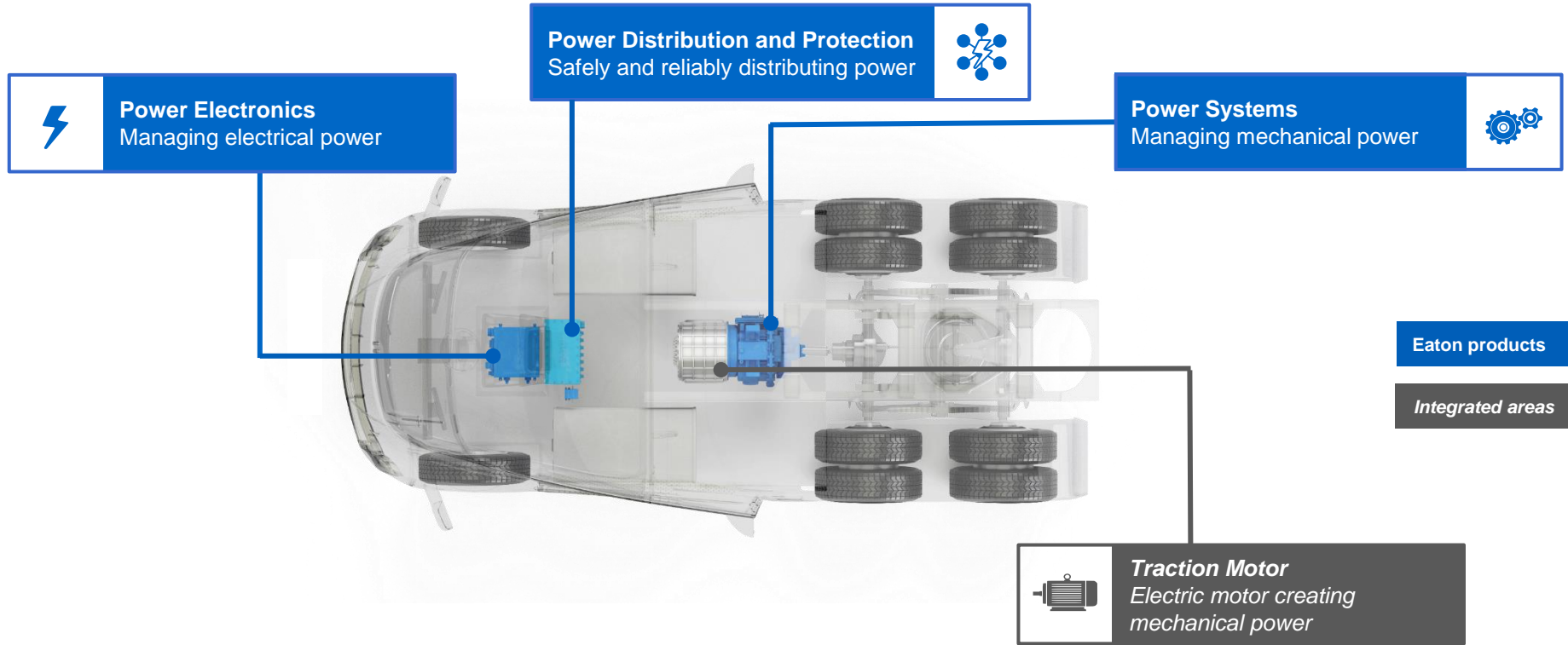
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# Eaton is helping to evolve EV technology at our sweet spot: *The convergence of electrical and mechanical power*



# Eaton specializes in power electronics, systems, distribution and protection



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Commercial vehicle requirements are **fundamentally different** than passenger vehicles



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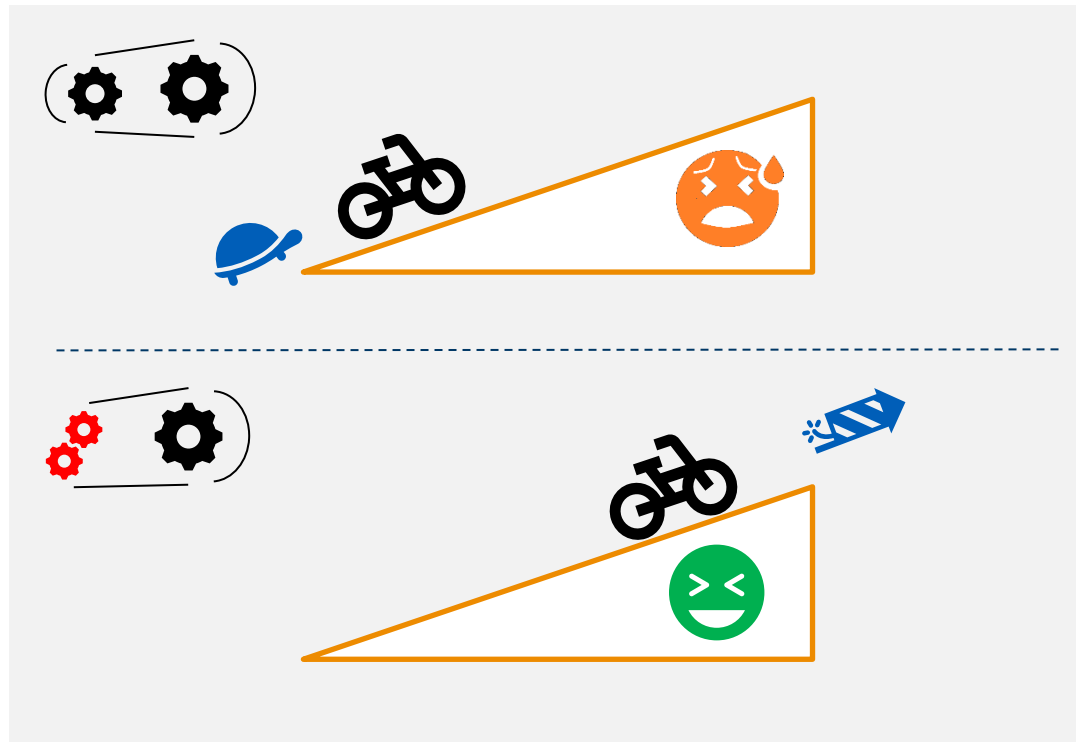
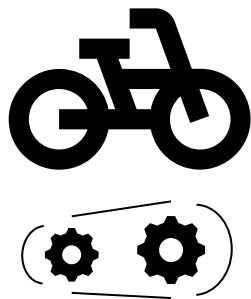


# Where do electric commercial vehicles make sense?



# Why do xEVs need a transmission?

Do you remember  
your first bicycle?



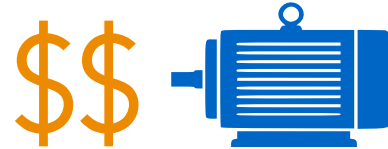
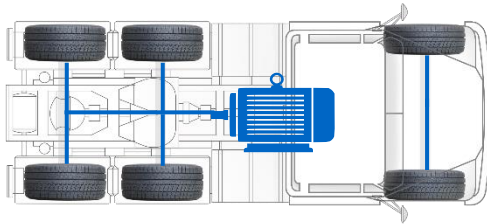
# Commercial vehicle requirements

Electric buses and trucks need to be able to:



## Direct drive

There is a simple (but larger) motor that sends power to the wheels



Trucks and buses are heavy (especially when full) and would need a very large and expensive motor

# Eaton xEV transmission line

MD 4spd



MD 2spd



HD 4spd



Coming soon!

- Improves **vehicle performance**
- Flexible **shift schedules**
- **Uncompromised gradeability**
- Efficient motor use, **extended range and/or reduced battery size**
- Engineered with **industry expertise**



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# Thank you

Questions? Let's discuss!



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# Portfolio of EV transmissions

*Eaton offers flexibility to meet application needs*

	MD 2 EV	MD 4 EV	MD 6 EV	HD 4 EV (proof of concept)
# of forward speeds	2	4	6	4
EV	✓	✓	✓	✓
PHEV		✓	✓	
Housing	Aluminum	Aluminum	Cast iron	Aluminum
Max. Torque (Nm)	700	1200	1150	2600
Max. input speed (rpm)*	6000	5000 (EV) 2800 (PHEV)	4000 (EV) 2800 (HEV/PHEV)	5000
Typical GCW (tons)	18T	18T	27T	43T
Smart gear selection		✓	✓	✓

