

# ELECTRIC ROAD SYSTEMS IN FRANCE

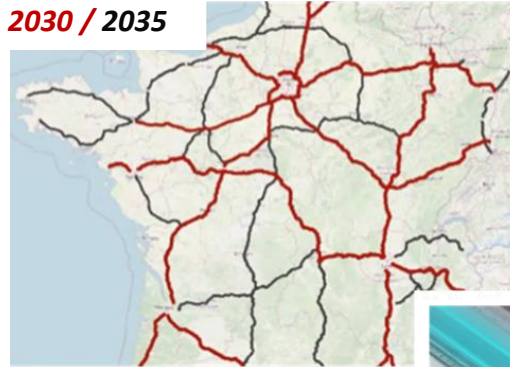
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# CHARGE AS YOU DRIVE PROJECT



**Pierre Delaigue** – Director of Connected, Autonomous & Electric Mobility – VINCI

2030 / 2035



ASPIRE Industry & Innovation Day - Industry Panel, Sept 2024

# VINCI, GLOBAL PLAYER IN CONCESSIONS, ENERGY & CONSTRUCTION

**68 838 M€**  
REVENUE

**279 000**  
EMPLOYEES

**4 000**  
BUSINESS UNITS

**120**  
COUNTRIES

\*2023 FIGURES

# VINCI IN THE UNITED STATES

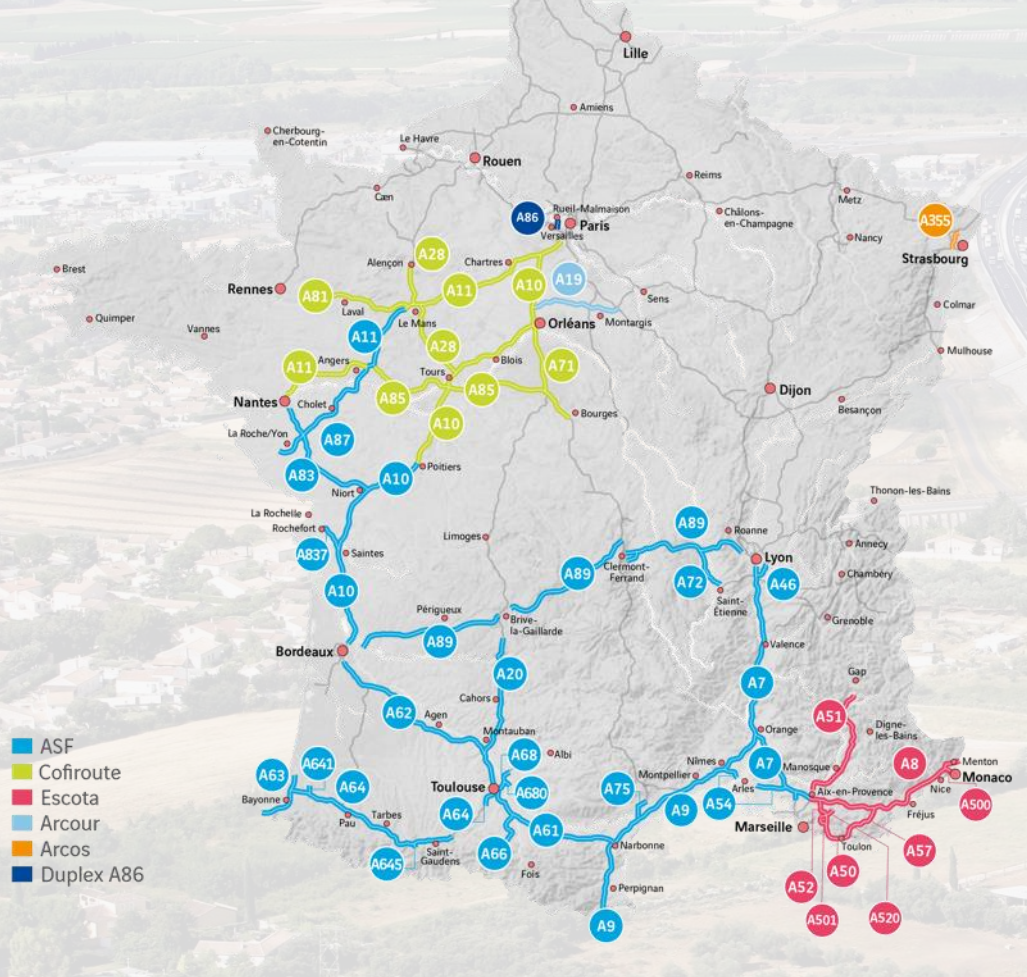
247  
BUSINESS UNITS



- VINCI Airports (5)
- VINCI Concessions (8)
- VINCI Energies (46)
- Cobra IS (8)
- VINCI Construction (180)

# HIGHWAY OPERATOR IN FRANCE

## VINCI Autoroutes network



4 443 KM  
MOTORWAY  
NETWORKS

54.1  
BILLION KM  
IN 2023  
ON VINCI  
AUTOROUTES MOTORWAYS

6 324 M €  
TURNOVER

5 513  
EMPLOYEES

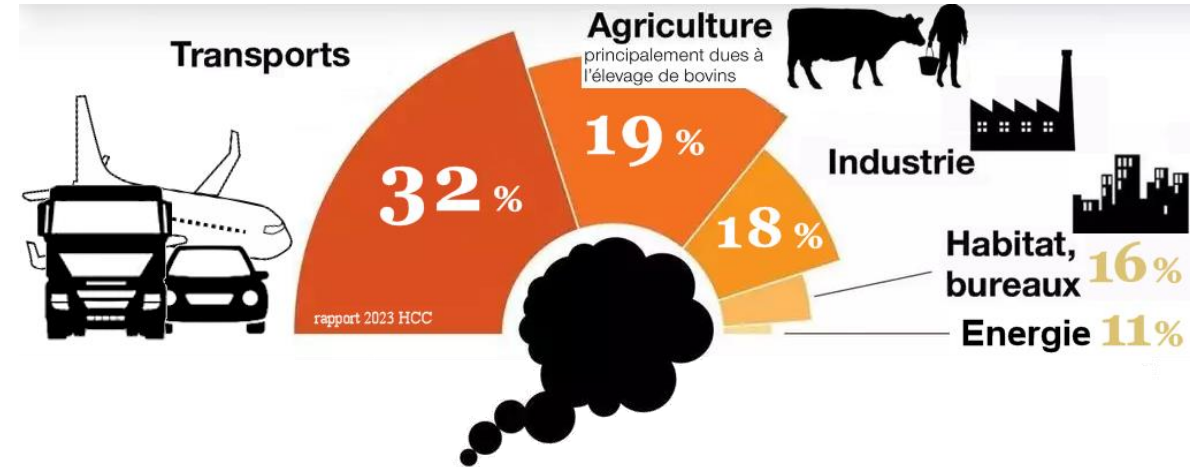
# HEAVY ROAD TRANSPORT - A MAJOR ENVIRONMENTAL CHALLENGE



-55% overall target by 2030 (vs. 1990)  
-45% for new trucks by 2030 (vs. 2019)



Transport is most emitting sector



Heavy road transport: 7,5% of national emissions

## BEST ALTERNATIVE: ELECTRIC ROAD SYSTEMS



Liquid biofuels & biogas



Big electric batteries



Hydrogen

### Environmental benefits



Reduced raw materials needs



Reduced carbon emissions

### Economic benefits



Reduced total costs vs static charger scenario

### Operational benefits



More range



More payload



Less downtime



**8950 kms of ERS to deploy on highways by 2035**



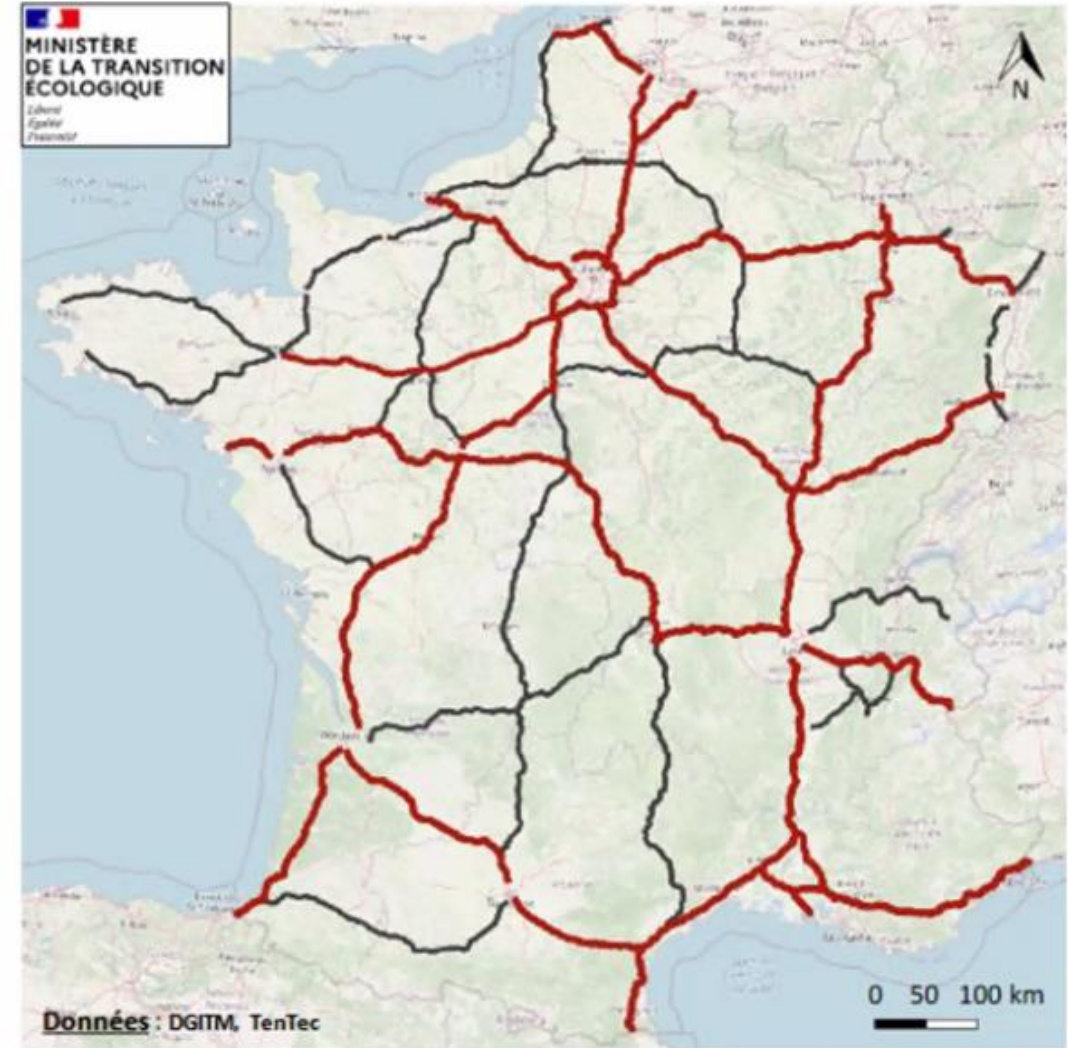
**36 B€ investment**



**Major socio-economic impacts**

## Next steps

- compare ERS technologies through projects
- decide on one solution to deploy at scale



**Red network by 2030 + black network by 2035**

# VINCI PROJECTS ON ERS



### ElectricRoad@Québec

ÉCOLE DE TECHNOLOGIE SUPÉRIEURE **ÉTS** Université du Québec Engineering for Industry  
UNIVERSITÉ LAVAL  
VINCI CONSTRUCTION  
ELECTROON CHARGING THE WAY FORWARD

### Project in Rouen

VINCI CONSTRUCTION OMEXOM  
ELECTROON CHARGING THE WAY FORWARD métropole ROUEN NORMANDIE

### Charge As You Drive

VINCI AUTOROUTES VINCI CONSTRUCTION  
ELECTROON CHARGING THE WAY FORWARD HUTCHINSON  
ELONROAD OMEXOM

### INCIT-EV @Versailles

INSTITUT VEDECOM VINCI CONSTRUCTION

### Smartroad Gotland @Visby

ELECTROON CHARGING THE WAY FORWARD EITECH

### eCharge @Cologne

ELECTROON CHARGING THE WAY FORWARD VINCI CONSTRUCTION  
VW bast Technische Universität Braunschweig

### EnBW @Karlsruhe

ELECTROON CHARGING THE WAY FORWARD VINCI CONSTRUCTION  
EnBW

### Floral Show @Balingen

ELECTROON CHARGING THE WAY FORWARD VINCI CONSTRUCTION  
EnBW

### EMPOWER @Nurnberg

ELECTROON CHARGING THE WAY FORWARD VINCI CONSTRUCTION  
FAPS Die Autobahn







**Charge As You Drive**  
Less Battery. More Range. For All

# ERS EXPERIMENT ON A10 HIGHWAY IN FRANCE

Induction by **electreon**



Conduction by **Elonroad**



VS

**2** technologies compared in the same highway conditions

Partners



electreon



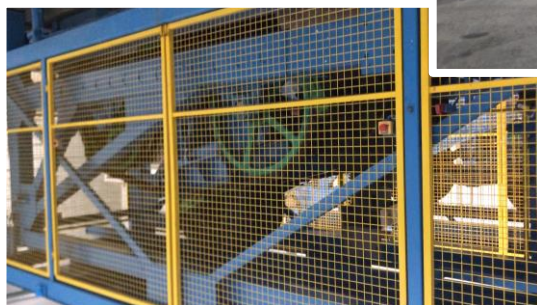
**4** categories of vehicles to test interoperability



## CLOSED TEST SITE IN NANTES



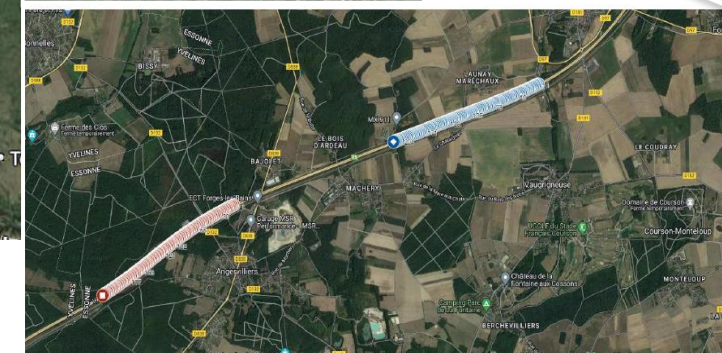
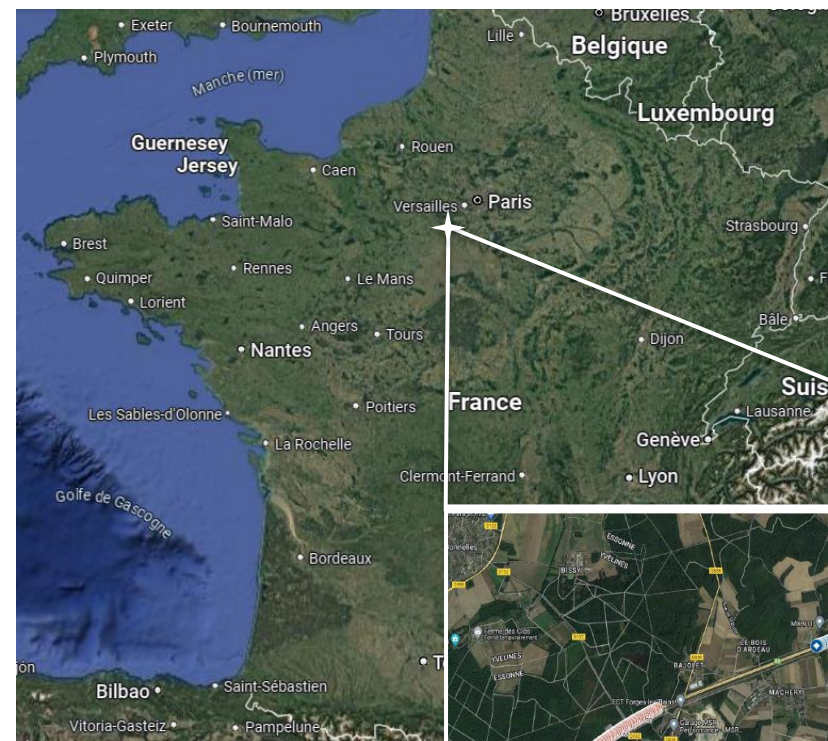
*Fatigue carousel*



*FABAC traffic simulator*

Need to sustain heavy highway traffic (5800 trucks/day on A10)

## A10 HIGHWAY NEAR PARIS



2 experimental sites

# ROAD INTEGRATION CHALLENGES



## During design phase

### Materials

EPDM material  
(reference = NA)

PU "Electreon"  
(reference = NA)

PU "Hutchinson"  
(reference = PU-3 140  
PTS)



Elastomeric & Polyurethane coil materials

### Mechanical properties



Young's modulus measurements



Friction measurements



## During installation

### Trench strategy & fillers



### Gluing products



### Installation pace / road closures

### Heat resistance & compaction



## During operation

### Water management



### Mechanical Durability



### Maintenance



### Friction



A semi-transparent blue filter is applied over the entire image. The background shows a multi-lane highway with several white semi-trucks driving away from the viewer. The sky is blue with light clouds, and there are green fields on the left side of the road.

**THANK YOU**