

RAG/TAG

Intentions of Správa železnic for the development of ERTMS/ETCS

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General Directory

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Key Points for Správa železnic



Safety

▶ Strong need of ATP that actually supervises the driver – speed, stop before the signal at danger

▶ Replacement of class B (only available on 25 % of the network, not ensure the necessary safety)

▶ Safety, but capacity problem (situation in CZ vs. other states)



Interoperability in Czechia and EU

▶ **Single system across the EU network** → equipping vehicles with one on-board that works everywhere, ERTMS MUST BE stable and robust system



Open Interface, cost-effective system

▶ Need of compatible and open interlocking interface – delivery times, capacities, cost-effective solutions

Technical Pillars of Implementation: One OBU for All

Strategy of ERTMS Implementation in Czechia: 2020 – 2040



**ETCS
L2**

High-Speed lines
New HSLs and Fast Connections lines

**ETCS
L2**

TEN-T lines
Backbone and very busy main lines

Class B decommissioning

**ETCS
L1 LS**

Secondary lines
Important and less busy lines

**ETCS
STOP**

Regional lines
with low traffic intensity

- L2 with lineside signals
- L2 with interlocking optimisation without signals – capacity reasons

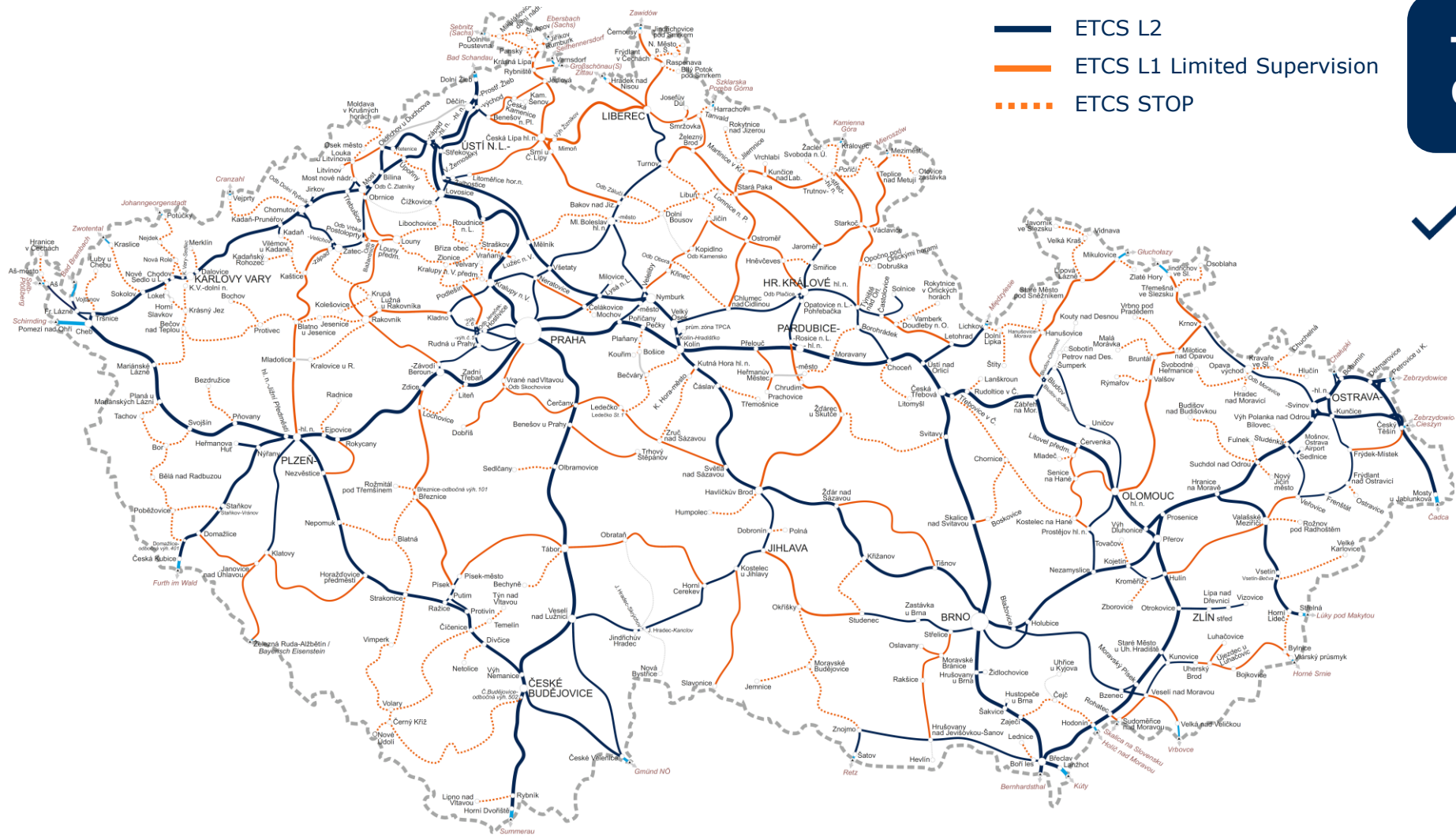
- L2 with lineside signals
- L2 with interlocking optimisation without signals – capacity reasons

- Level 1 Limited Supervision

- LEU and controllable Eurobalises

ETCS is the only target ATP system for all the Czech railway network
(user friendly, sustainable, economically viable)

Technical strategy of ETCS Implementation in Czechia 2020 – 2040

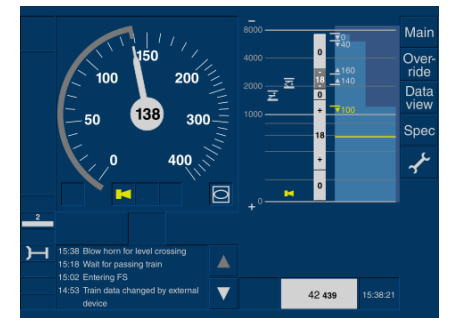


- ETCS L2
- ETCS L1 Limited Supervision
- ⋯ ETCS STOP

The Government of Czechia and MoT



approved the ETCS plan and technical variants for all lines in Czechia



Solution for TEN-T lines: ETCS Only Operation + interlocking optimisation

- **Mixed operation** of vehicles with OBU ETCS and non-ETCS vehicles:

Line Capacity limited

Possible safety risk

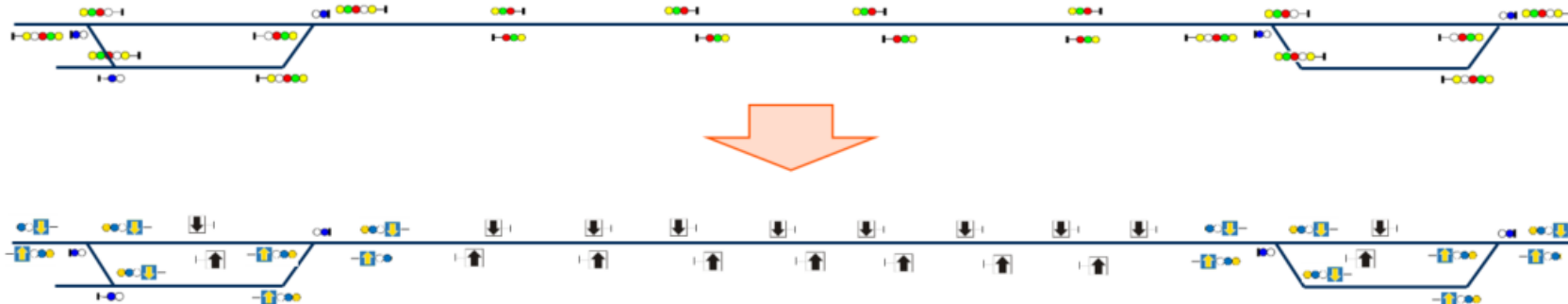
Double CCS maintenance

Not real benefits for RUs using ETCS

ERTMS benefits are not gained

Max. speed 160 km/h is a limit

- **The only way, how to eliminate these negatives, is to ensure ETCS-only operation with conventional interlocking optimization** (incl. Class B decommissioning)
- **All vehicles** on the line shall be equipped **with OBU ETCS**



Solution for Secondary Lines based on ETCS L1



Rapid solution of ATP implementation necessary



Crucial targets and requirements for Czech regional lines

To **avoid accidents caused by human factor** (driver) → frontal collision of trains

Applicability of the digital and technical solution in a **very short time**

Solution **MUST be compatible with OBU ETCS**

Technically **simplified and economically favorable** solution



Simple interlocking, LEU and Eurobalises

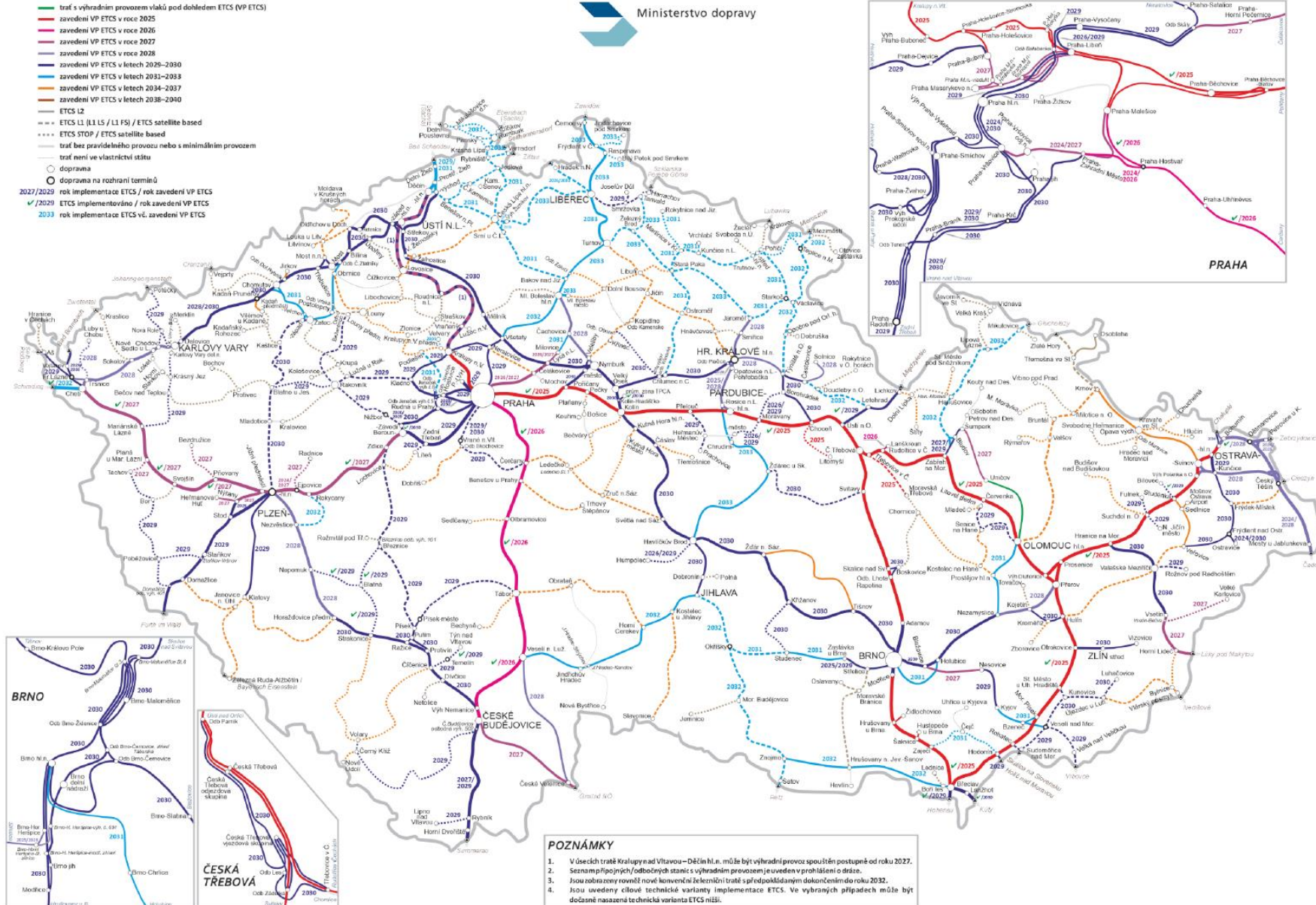


Solution based on **ETCS L1 (Limited Supervision)**

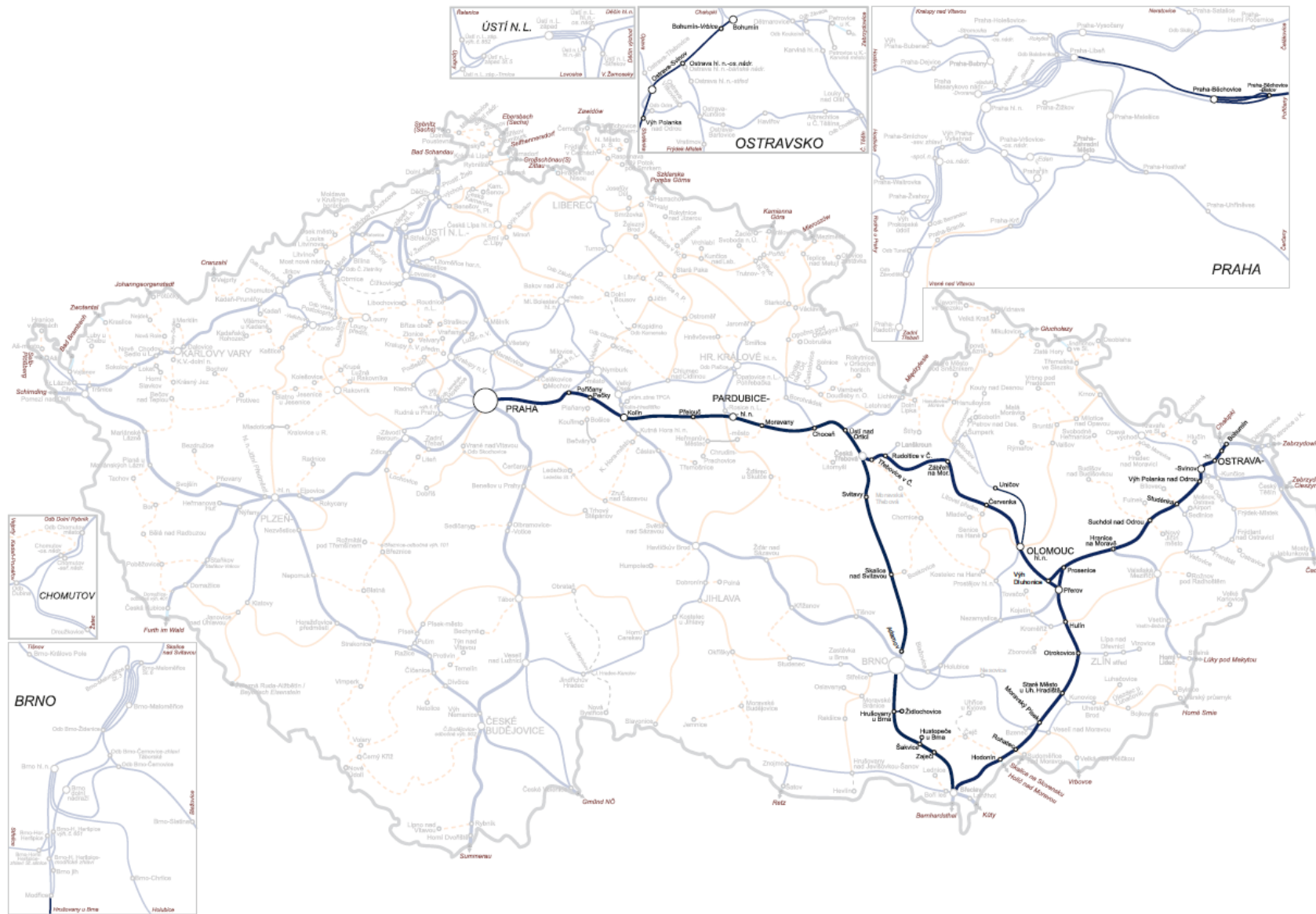
ETCS STOP – detection of undesirable passing Signal at Danger emergency brake + maximum speed supervision – station/open line

ETCS L1 Limited Supervision – solution working with braking curves

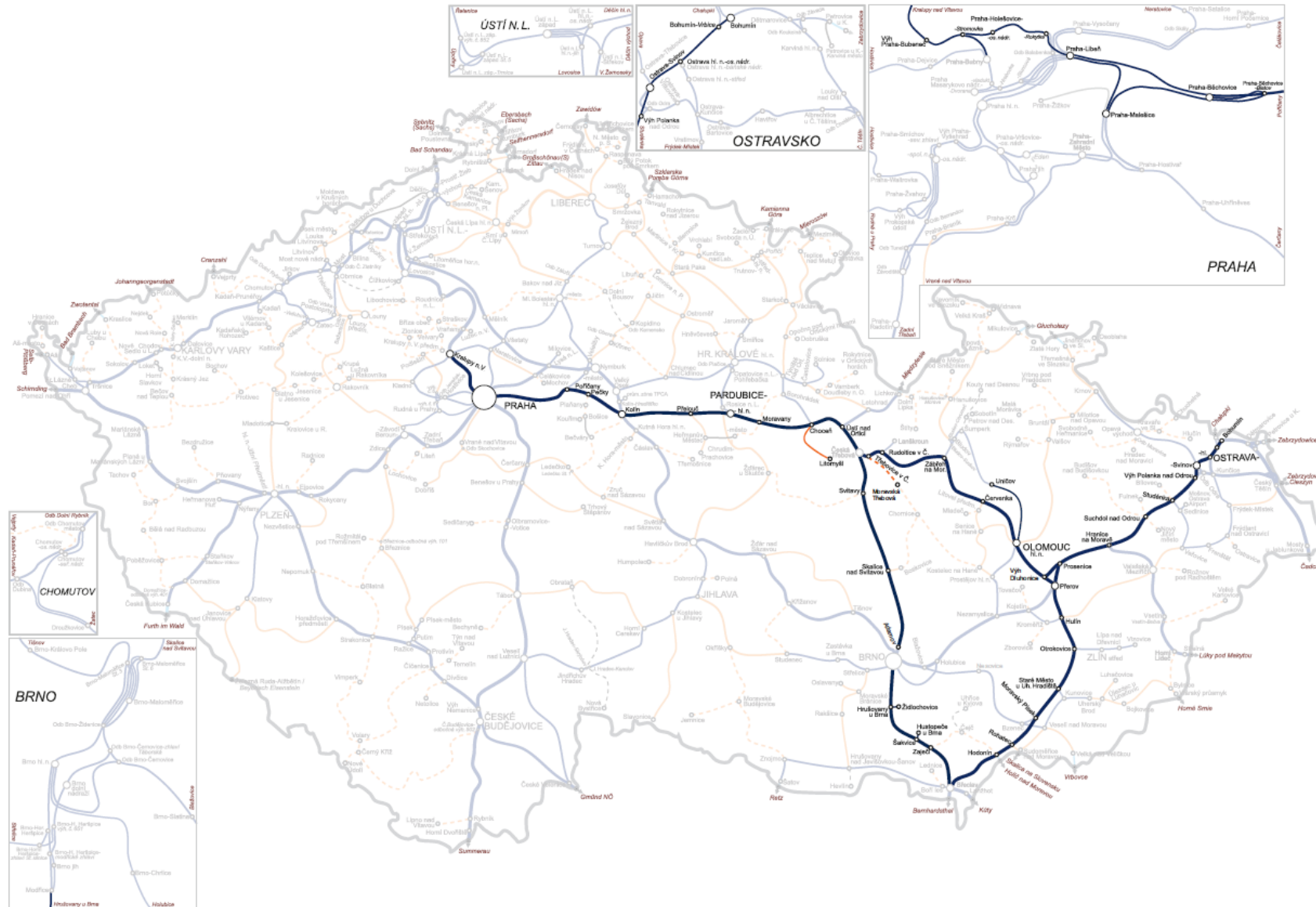
Timetable of ETCS Implementation – Government Resolution



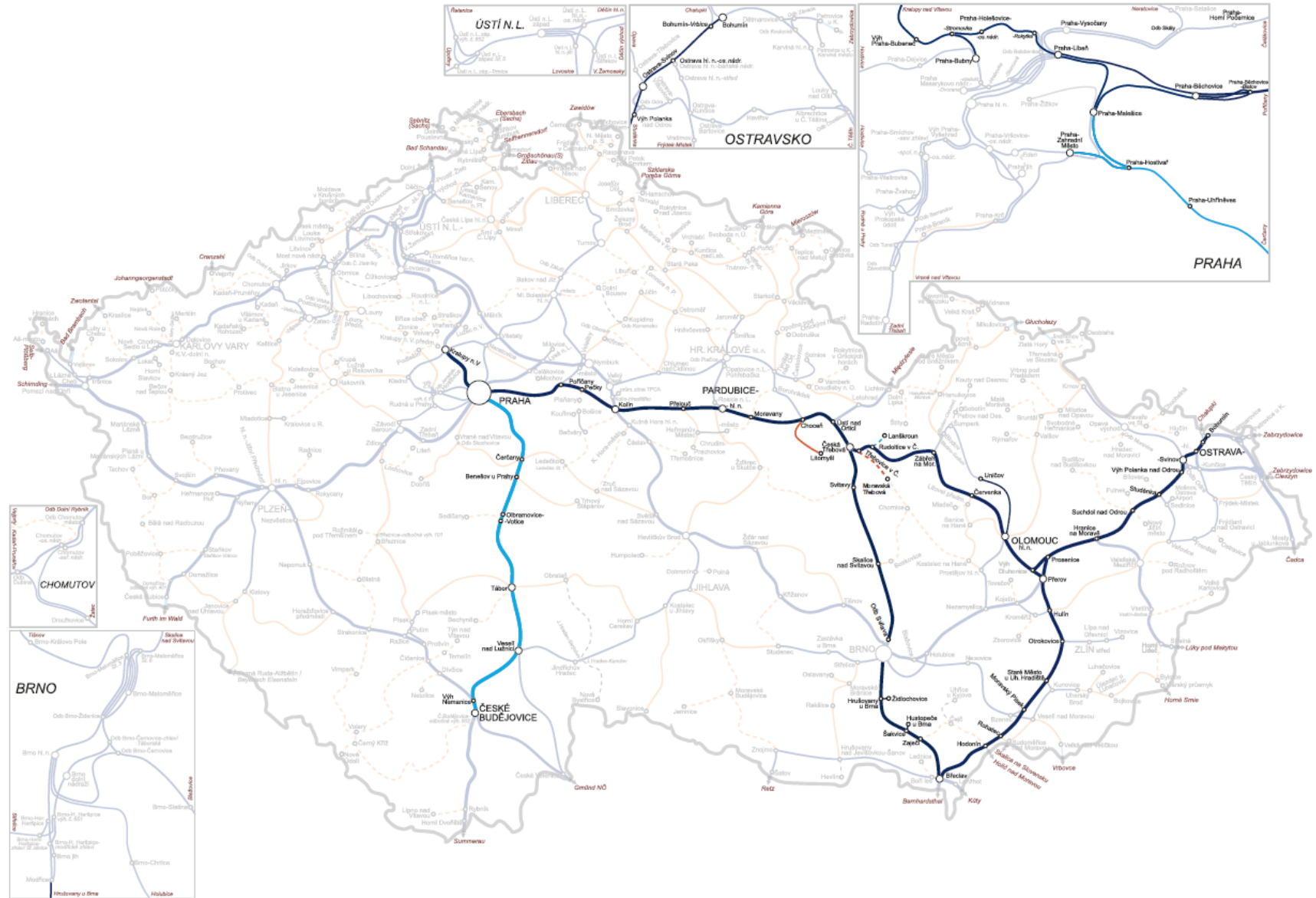
ETCS Exclusive Operation from January 2025



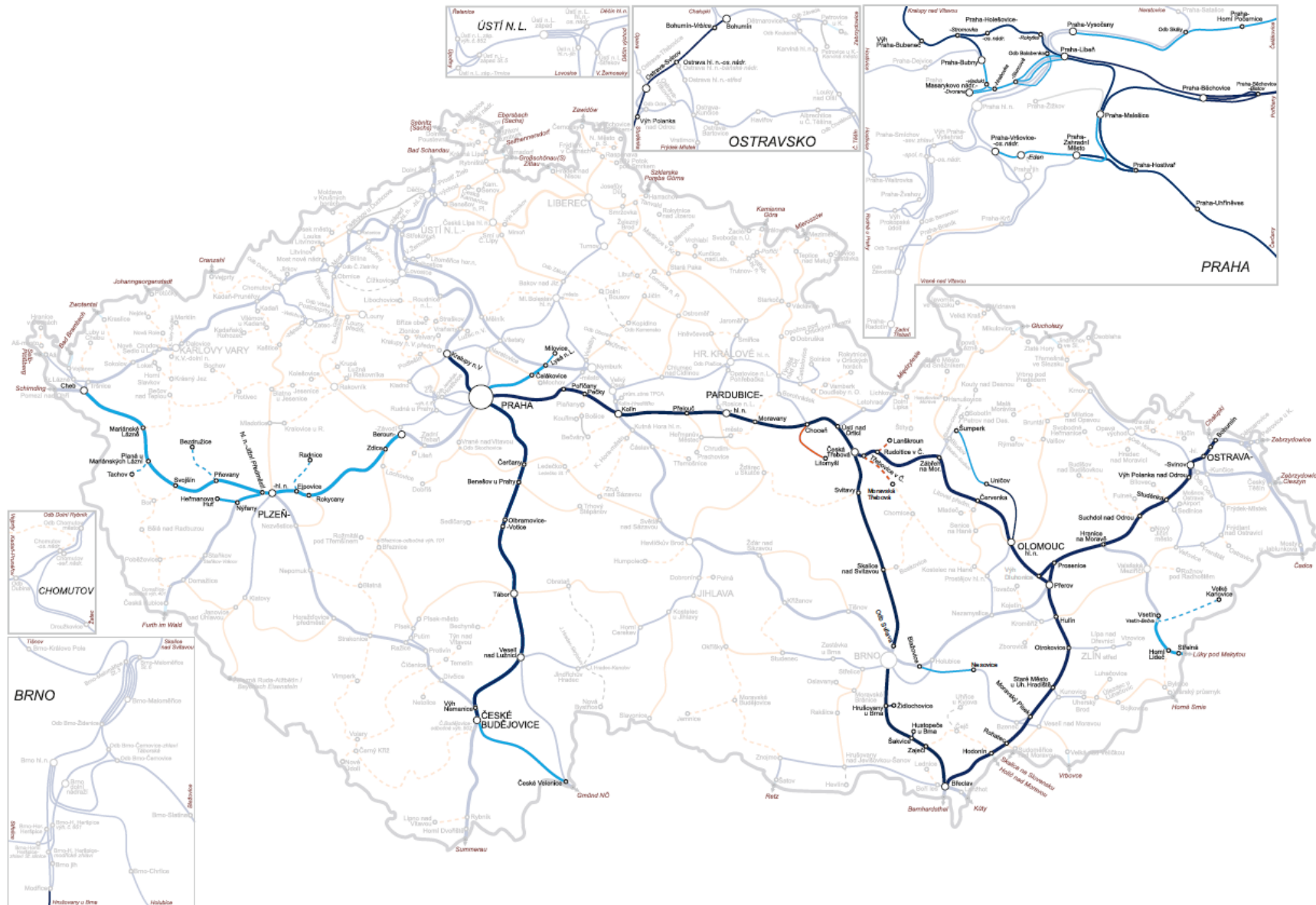
ETCS Exclusive Operation from December 2025



ETCS Exclusive Operation from December 2026

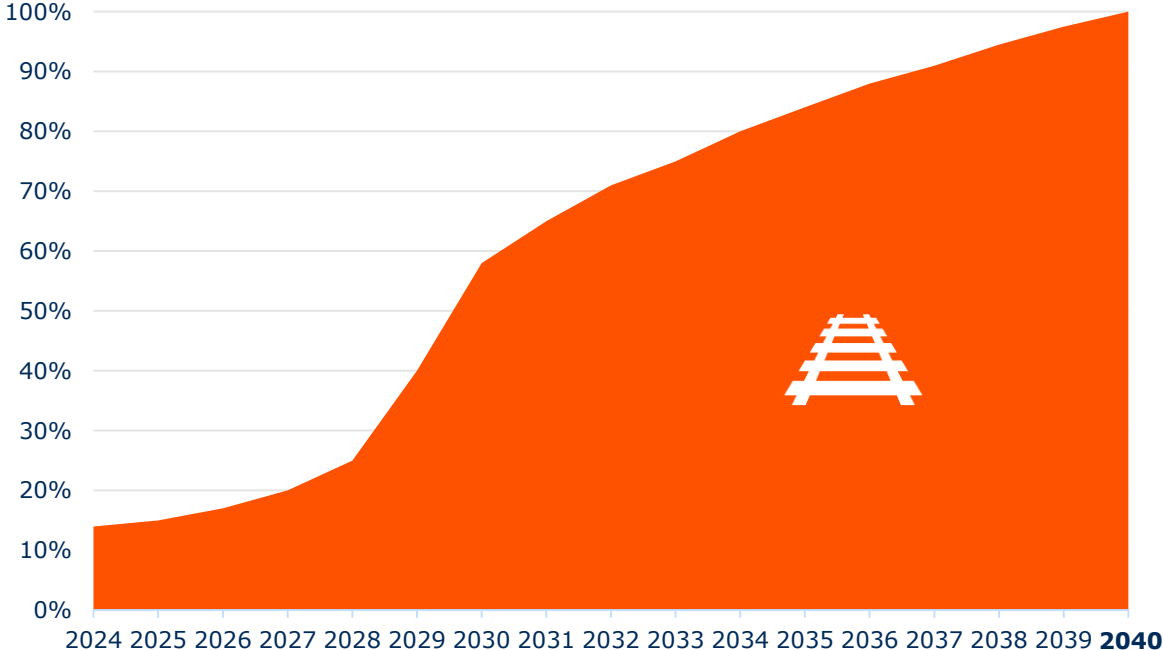


ETCS Exclusive Operation from 2027

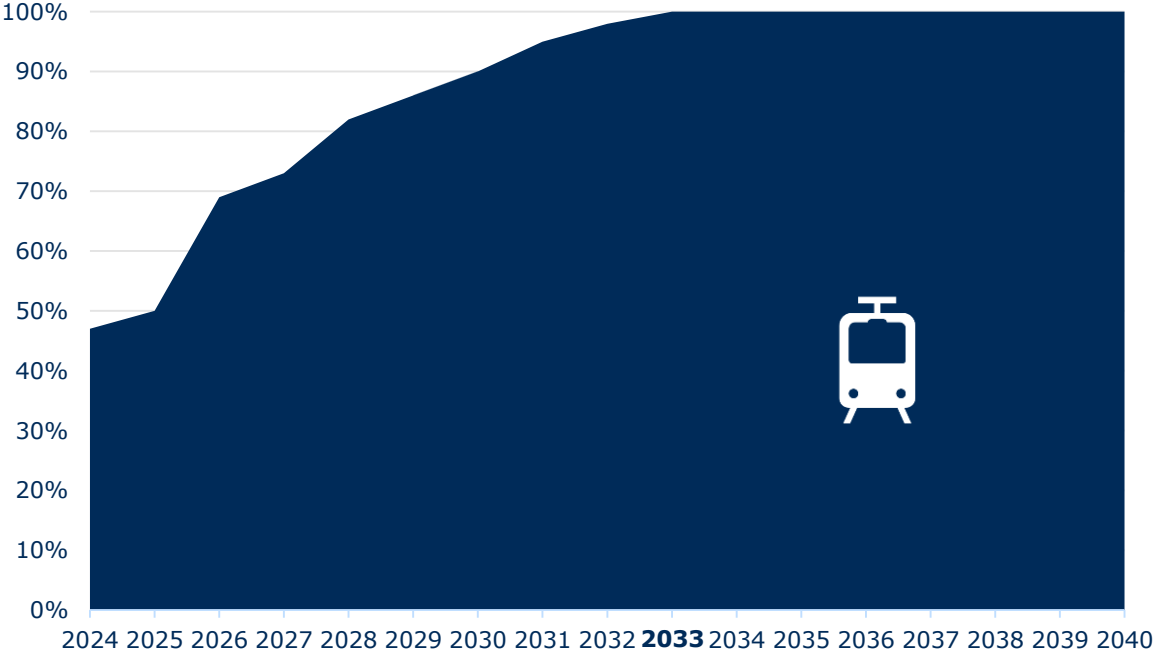


Strategy of ERTMS Implementation in Czechia

Lines equipped with ETCS by 2040



Vehicles equipped with ETCS by 2040



The Czech Fleet Overview



More than **120 operators** in Czechia



High number of **different loco types** of small series
(lower tens of locos in a serie in best cases)

▶ The costs of prototypes are divided in small number of locos what results in very high costs for operators



Average age of the rolling stock is approximately **30 years**

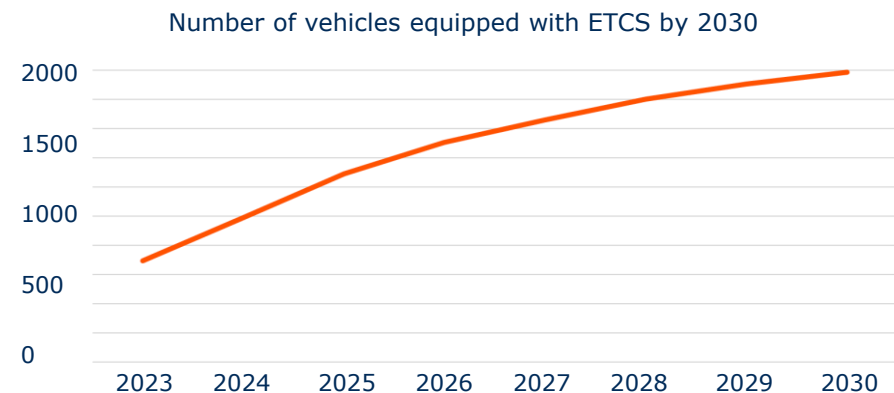


Vehicles to be retrofited

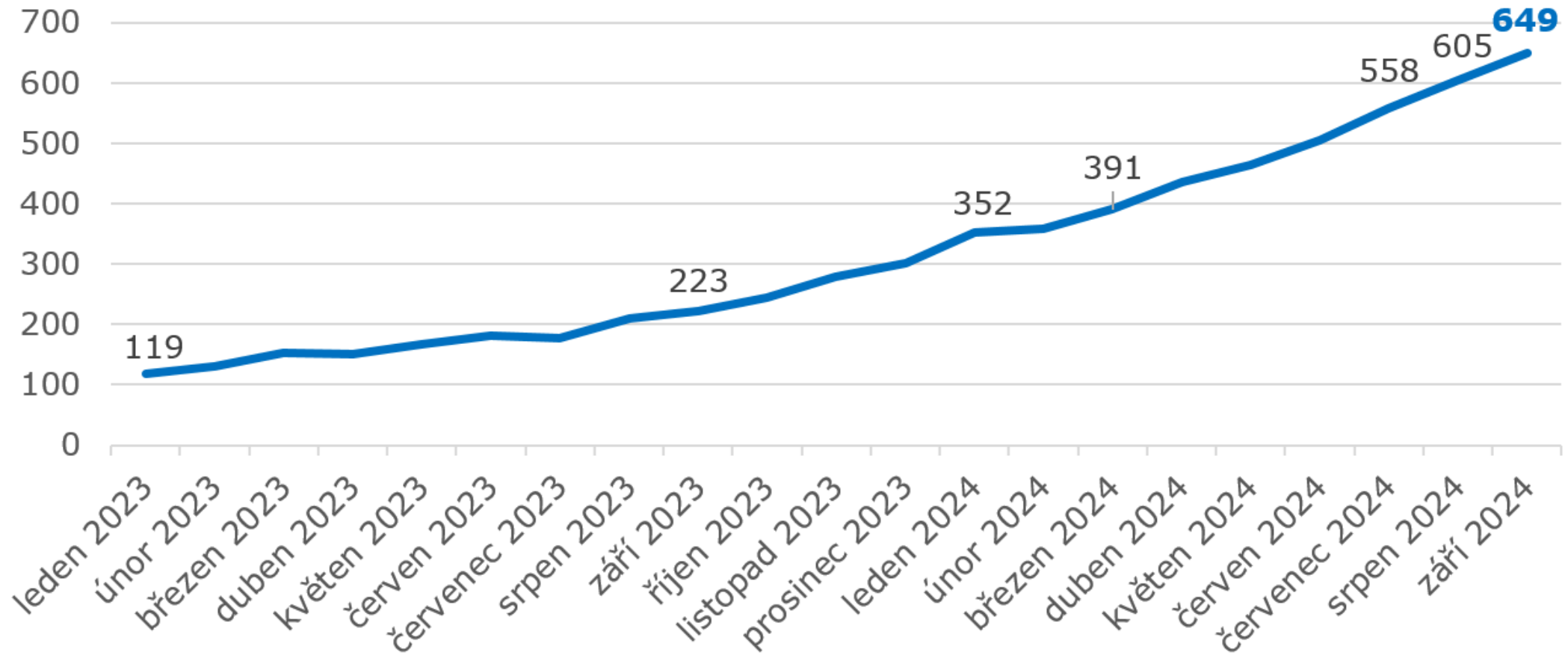
▶ **EV locos:** from 90s and newer

▶ **Diesel locos:** locos modernised after 2000

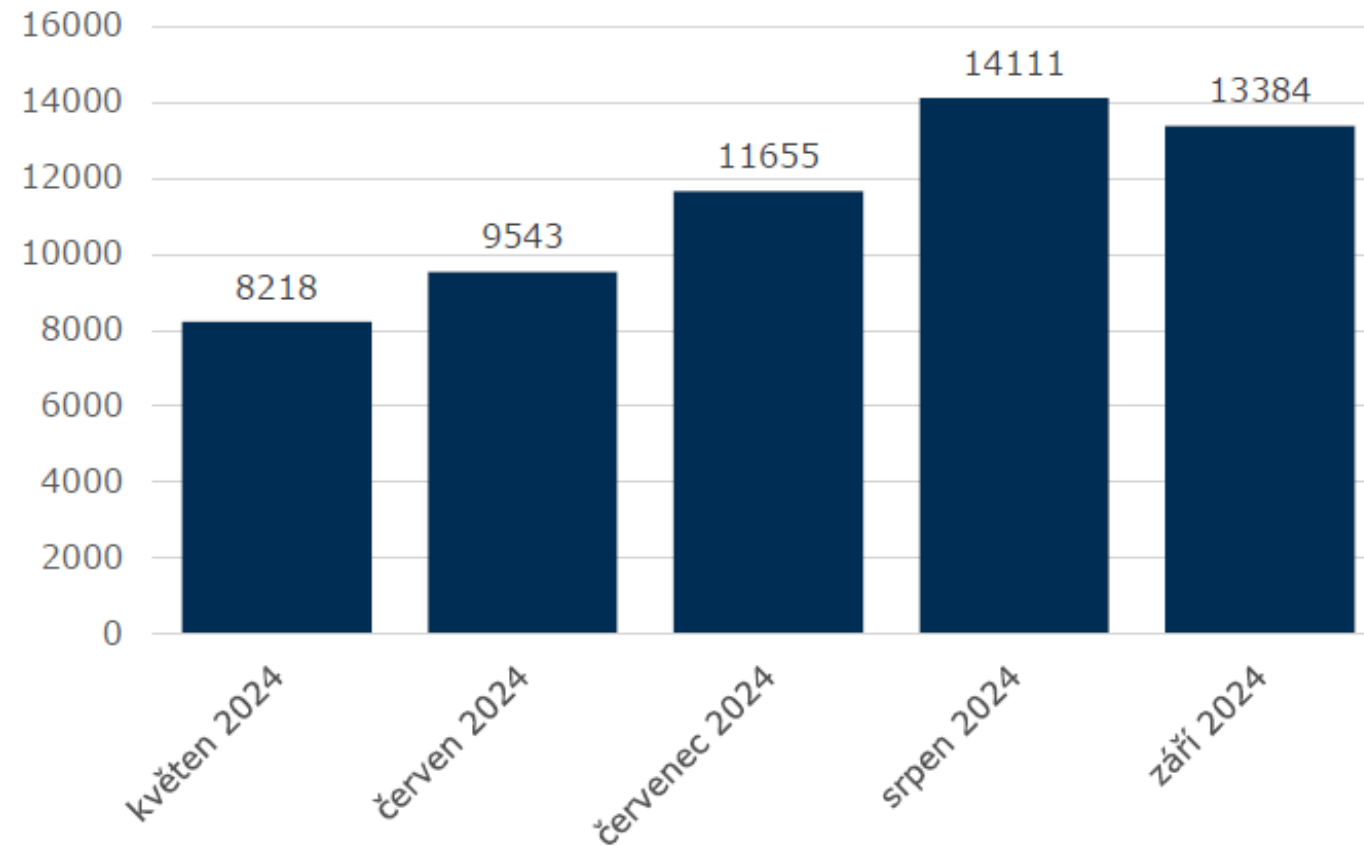
▶ **Units:** from 90s and newer



The Number of Unique ETCS OBUs on the Railway Network in Czechia



Number of Trains with ETCS Supervision (Lines with ETCS Exclusive Operation since 2025)



Resume – What Do We Expect from CCS TSI Application

- ✓ **Rapid safety increase by ATP application in Czechia needed**
- ✓ **ERTMS/ETCS (L1, L2) is a target, class B shall not be installed any more**
- ✓ Necessary conditions – National level 
 - **Strengthening of market capacities** (suppliers, designers...) compared to the current state
 - **ETCS exclusive operation** - all vehicles equipped with OBU ETCS
 - **Technically and economically suitable solution** also for secondary lines (ETCS L1 LS)
 - How to **open interface between interlocking products incl. ERTMS?**
- ✓ Necessary conditions – European level 
 - **Stability needed** – TSI shall be **stable and shall ensure backwards compatibility** solution
 - **Minimum changes** of an **existing** OBU ETCS (frequency of upgrades 10 - 15 years)
 - **Competition** among ETCS suppliers (trackside as onboard) shall **increase**
 - **Level 1 shall remain** in the CCS TSI also for future – crucial for making last mile interoperable

Thank you for your kind attention

**Intentions of Správa železnic
for the development of ERTMS/ETCS**

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