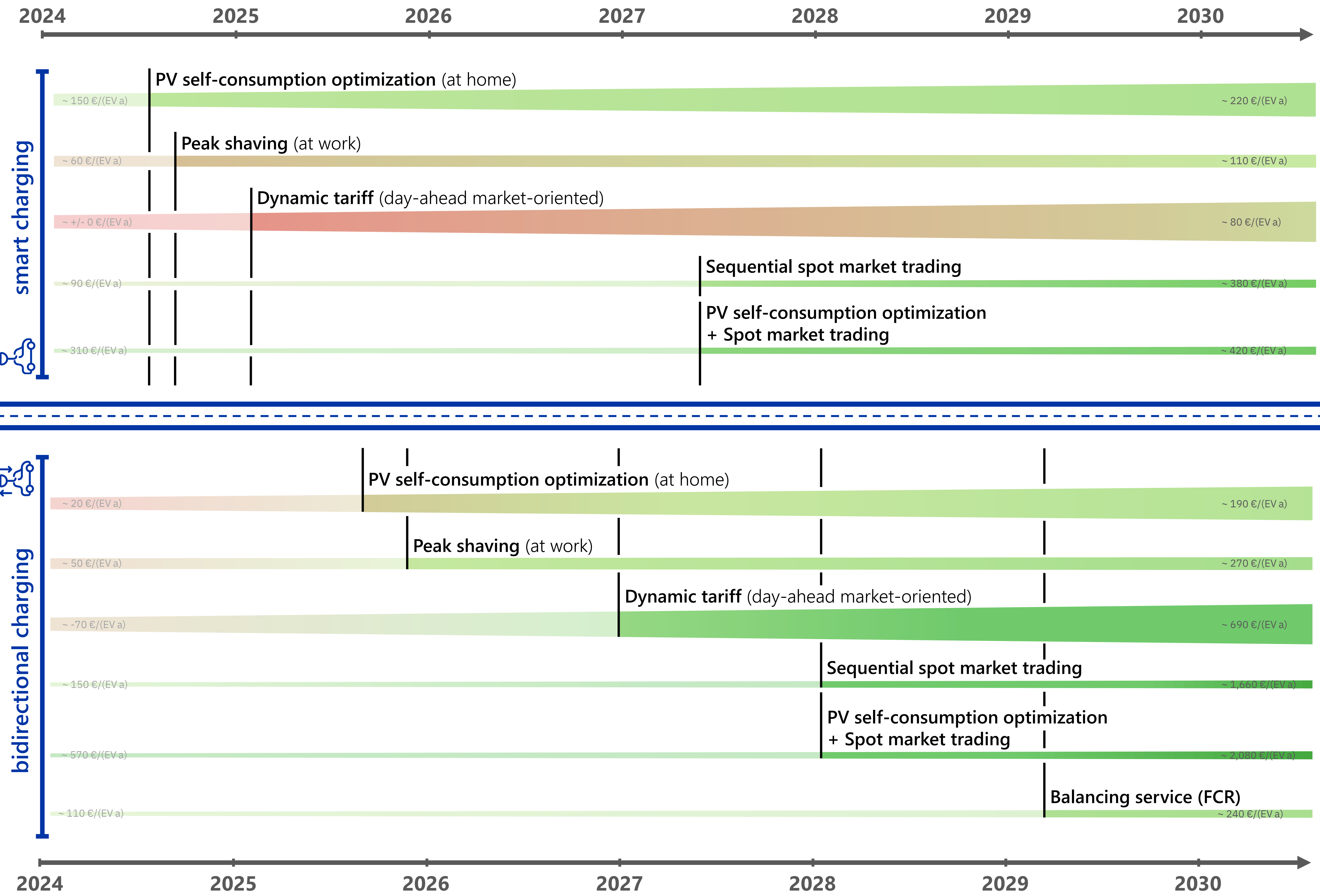


Use Case Implementation Roadmap

based on technical readiness and profitability prospects*



* chart adapted from on Figure 10 in "Prospects of use cases and multi-use of smart electric vehicle charging and discharging from the user's perspective", P. Vollmuth, Dissertation, TU München, 2024

EV = electric vehicle

Methodology

A. Calculation of technical implementation effort & expert assessment for each use case ¹

B. Model-based simulation of optimized charging and discharging strategies for each use case ²

C. Calculation of achievable number of potential users of each use case ³

Multi-criteria assessment and visualization of future prospects of smart and bidirectional charging use cases in Germany until 2030

Chart Legend

color rating:
profitability (methodology B.)
 (cost savings - additional costs; compared to direct charging)

≤ 0 > 100 > 200 > 400 > 800 in €/(EV a)

white-covered period:
 technical readiness of use cases for large-scale implementation (methodology A.)

bar width over time:
 achievable number of EV users per use case (methodology C.)

Conclusions

- Smart charging use cases are likely to be implemented in Germany on a larger scale in the coming years – especially behind-the-meter cases –, where most use cases are already profitable today.
- The large-scale implementation of bidirectional charging use cases will still take some time, especially to implement adequate technical standards and to reach a sufficient number of technology providers, yet high profits are possible in the future.
 - The achievable number of EV users for the investigated use cases – even for 2030 – is rather limited due to market and user constraints (not necessarily due to the availability of EVs or charging infrastructure).

Gefördert durch:



DLR Projektträger
 Förderkennzeichen:
 01MV21UN01

Contact:
 pvollmuth@ffe.de
 Websites:
<https://unit-e2.de/en>, <https://www.ffe.de/en/>



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