Managing grid integration of electric vehicles

GEF-funded Global E-mobility Programme

15 March 2022
15h00 to 17h00 (CET)
Agenda

[Register here]

International Energy Agency

Background Note

Electric vehicles are rapidly growing as means of transport in many countries in the world. Driven by various policy measures to decarbonise transport and to improve air and noise quality, the number of EVs on the road increased dramatically from less than 20 thousand to around 10 million between 2010 and 2020. Supplying electricity to these vehicles will become more important in the coming decades.

EV charging occupies a small share of electricity consumption compared to national levels but local distribution systems may bear the brunt. According to the IEA's Global EV Outlook 2021, charging of 230 million EVs in the Sustainable Development Scenario (SDS) would account for 2% to 5% of the total electricity consumption of different countries and regions by 2030[1]. Meanwhile, several studies show the need to upgrade and increase investments in distribution infrastructure such as in California[2] and in India[3]. Managing the charging process would be critical in order to minimise costly upgrades and to contribute to providing value to the grid.

Integrating EVs into the grid would involve various issues that need to be addressed as more countries shift to electric mobility. From the EV user to the system operator, stakeholders would need to align on issues such as data protection and charging incentives, charging technology and standards, market design and regulation, and power system operations and infrastructure planning. Variances in countries' EV diffusion patterns, regulatory frameworks, and energy security challenges among others, would need to be considered to ensure the readiness of the different power systems to support electric mobility.

Under the GEF-funded global programme to support countries with the shift to electric mobility, the IEA is developing a manual for policymakers to assess the impact and manage the integration of electric vehicles and leverage their benefits to the grid. As part of this effort, the IEA is conducting a public webinar to discuss the following questions:

1. What are the impacts of EV charging and what is the potential to manage them?
2. What can we learn from real-world deployment of measures?
3. What set of measures should policymakers prioritise to ensure a successful integration of EVs?

[1] IEA (2021) *Global EV Outlook 2021*. Available at: https://www.iea.org/reports/global-ev-outlook-2021.
[2] Jenn, A. and Highleyman, J. (2022) 'Distribution grid impacts of electric vehicles: A California case study', *iScience*, 25(1), p. 103686. doi: 10.1016/j.isci.2021.103686.
[3] GIZ (2019) *Impact Assessment of Large-Scale Integration of Electric Vehicle Charging Infrastructure in the Electricity Distribution System*. Available at: https://changing-transport.org/publication/ev-charging-and-electricity-grid/.

Agenda

	Moderated by: **Per Anders Widell,** GEF E-mobility Programme Co-ordinator, IEA
15:00 – 15:10	**Welcome and opening remarks** **Alejandro Hernandez,** Head of Renewables Integration and Secure Electricity Unit, IEA
15:10 – 16:20	**Managing grid integration of electric vehicles** **Charging impacts and the potential to manage them** *What are the impacts of EV charging on the power system? What are the opportunities to manage or co-integrate them with VRE? What are the range of issues that policymakers should look at in order to realise this management potential?* • Cristina Corchero, Head of Energy Systems Analytics, IREC; Operating Agent for IEA HEV TCP Task 43: Vehicle/Grid Integration **Insights from real-world deployment of measures** *What are the results from pilot studies or commercial deployment of managed EV charging? What are the hidden barriers to deployment of such measures? What can be improved?* • Monika Dernai, Team Lead Sustainability, Mobility, BMW Group (ChargeForward pilot in California) **Prioritising measures for EV integration** *How should different countries prioritise measures to integrate EVs? What are the key aspects of the electric mobility ecosystem that policymakers should take note of in order to ensure a smooth integration into the grid?* • Christer Skotland, Senior Engineer, Norwegian Water Resources and Energy Directorate (NVE) (Insights from Norway) • Shyamasis Das, Independent Consultant (Insights from India/Vietnam)
16:20 – 16:50	**Q & A and panel discussion** Moderated by: **Luis Lopez,** Analyst, Renewables Integration and Secure Electricity Unit, IEA
16:50 – 17:00	**Concluding Remarks** **Per Anders Widell,** GEF E-mobility Programme Co-ordinator, IEA
17:00	**End of meeting**

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As mentioned in the notice, we may also contact you about future events that might be of interest. If you do not wish to be contacted about future events please send an email to anna.kalista@iea.org