

Power Systems & Markets



About Neon

[Neon](#) is a Berlin-based boutique consulting firm for energy economics, founded in 2014. We help our international [clients](#) from the public and private sector to design and navigate power systems and markets through studies, advisory and trainings.

We work on seven [topics](#): the market value of wind and solar energy, electricity market design, redispatch, (whole) system costs of renewables, balancing energy, power market modeling and open source / open data.

About your instructor

Prof. Dr. Lion Hirth is founder and director of Neon and teaches at Hertie School in Berlin. Lion is energy economist and expert in wind and solar energy, power market modeling, and electricity market design. He has five years of industry experience, holds a Ph.D. in energy economics, has published numerous highly cited academic articles, and regularly advises public and private sector clients.

- » [Curriculum vitae](#)
- » [Publications](#)
- » [Project references](#)

Executive training seminar

- » For energy professionals in industry, finance, policy and think tanks
- » Extend your analytical understanding of electricity markets and energy economics
- » Understand Europe's electricity sector during crisis, transformation and decarbonization
- » Applied and relevant, yet scientifically sound and rigorous
- » More than 98% of previous participants would recommend it to a colleague

Pricing and booking

- » Two days
- » EUR 1200 + VAT
- » 40% discount for NGOs and public sector, 10% early bird discount
- » English or German
- » In-house seminars and group discounts
- » Registration: neon-energie.de/seminar
- » hirth@neon-energie.de
- » [+49 1 57 55 199 715](tel:+4915755199715)



1. Power Plants

- » Power plant technology for non-engineers
- » Coal-fired power plants
- » Gas-fired combined cycle plants
- » Hydroelectricity
- » Wind power
- » Solar photovoltaics

Electricity is fundamentally different from other commodities.

Understand why.

2. Cost of Electricity

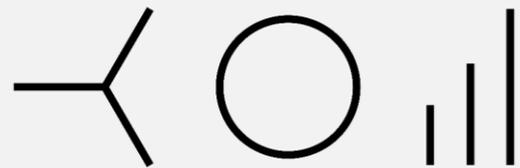
- » Fixed and variable cost
- » Annualized fixed cost
- » Cost structure of high- and low-carbon generators
- » Levelized costs of electricity (LCOE)
- » Screening curves

3. Value of Electricity

- » Why power prices vary so much
- » Non-storability of electricity
- » Price setting in power markets
- » The Merit Order Model
- » Market value of wind and solar energy
- » Mitigating the renewable energy value drop
- » System-friendly renewables
- » Market simulation

4. The Long Term

- » Load duration curves
- » Residual load duration curves
- » Optimizing the plant mix with pen and paper
- » The Screening Curve Model
- » The impact of renewable energy on the optimal generation mix



5. Markets for Electricity

- » Three markets for electricity: retail, wholesale, system services
- » Future and spot markets
- » Power exchanges and over-the-counter trading
- » Market design

6. Balancing Energy

- » Balancing reserve requirements
- » Balancing power auction design
- » Imbalance pricing
- » Recent reforms and further reform options
- » The German “balancing paradox”
- » When things go wrong

7. Power Grids

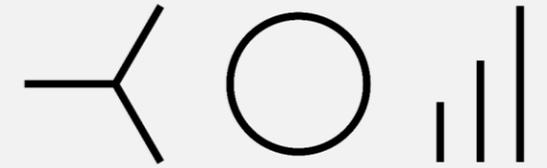
- » Power system technology for non-engineers
- » The DC Load Flow Model
- » Redispatch and congestion management
- » Incentive regulation for network operators

8. Locational Pricing

- » Zonal electricity markets
- » Nodal pricing
- » Local markets for flexibility
- » Locational investment incentives

9. Electricity Storage

- » Storage technologies
- » Batterie technologies
- » Stationary use cases for batteries
- » Behind-the-meter applications
- » System balancing by batteries



Renewable energy support and climate action are shaping the energy sector.

Understanding policy has never been more important.

10. EU Emission Trading

- » EU ETS
- » Price determination: fundamentals, expectations, speculation
- » Reasons for the price decline in the EU ETS
- » Reform options and proposal

11. RE Support Schemes

- » Reasons to support renewable energy – or not
- » FIT, FIP, CfD, TGC, ITC, RPS: The diversity of support schemes
- » Risk structure of support schemes
- » Policy design parameters

12. RE Auctions

- » Auction results
- » Optimal bidding strategies
- » Auction simulation
- » Design elements for auctions
- » Underbidding and the “winner’s curse”
- » Key risks and de-risking strategies