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 sectors to design and navigate power systems and markets through studies, advisory and trainings.

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

Our trainings

- 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

- Private sector: EUR 12000 + VAT
- Public sector / NGOs: EUR 9000 + VAT
- Contact us for bookings and inquiries:
- hirth@neon.energy
- +49 1 57 55 199 715

In-house seminars

- Two intensive days
- English or German
- High-quality printed booklets included

1. The Energy System

- The global energy system
- The basic physics of power systems
- The electric power industry
- The astonishing rise of wind & solar energy

Electricity is fundamentally different from other commodities.

Understand why.

2. Power Plants

- Power plant technology for non-engineers
- Coal- and natural gas-fired power plants
- Hydroelectricity
- Wind power
- Solar photovoltaics

3. 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

4. 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
- Interactive market simulation

5. The Long Term

- Load duration curves
- Optimizing the plant mix with pen and paper
- The Screening Curve Model
- The end of base load plants
- Scarcity pricing

6. Fuel Markets

- The coal market
- The carbon market
- The natural gas market
- The 2022 energy crisis

7. System Transformation

- Flexibility needs and flexibility resources
- System-friendly wind power
- Tapping into hydropower flexibility
- The demand side
- Hydrogen
- Case study: the 2021 Texas energy crisis

8. Markets for Electricity

- Three markets for electricity: retail, wholesale, system services
- The day-ahead and intraday markets
- Forwards and futures
- Power exchanges and over-the-counter trading
- Market design

9. Balancing Energy

- Blackouts
- Balancing reserve requirements
- Balancing products and procurements
- Auction design
- Imbalance settlement and the imbalance price
- The “German balancing paradox”
- When things go wrong: June 2019

10. Power Grids

- Power grids for non-engineers
- The DC Load Flow Model
- Redispatch and congestion management

11. Locational Pricing

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

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

Understanding policy has never been more important.

12. Electricity Storage

- Storage technologies
- Battery & hydrogen deep-dives
- Behind-the-meter applications
- System balancing with batteries

13. RE Support Schemes

- The “why”: reasons to support renewable energy
- The “how”: support scheme design
- FIT, FIP, CfD, TGC, ITC, RPS: The diversity of support schemes
- Risk and de-risking

14. RE Auctions

- Auction results
- Optimal bidding strategies
- Underbidding and the “winner’s curse”
- Auction design