Designing retail electricity tariffs for a successful Energy Union

RAP Webinar

Christos Kolokathis
Associate
ckolokathis@raponline.org

Andreas Jahn
Senior Associate
ajahn@raponline.org
Questions?

Please send questions through the Questions pane.
Our experts

Christos Kolokathis

Andreas Jahn
Effective network charges are a key tool for achieving European energy transition goals
The power system of the past

- Shared bulk transmission
- Shared distribution
- Customer-specific facilities
The transforming power system

Source: European Distribution System Operators’ Association for Smart Grids
Network costs and tariffs
What are network costs and tariffs?

- Shared bulk transmission
- Shared distribution
- Customer-specific facilities

Source: European Distribution System Operators’ Association for Smart Grids
Why are network charges important?

Network charges constitute a quarter of the bill

Structure of network tariffs

• Fixed component: usually defined by number of customers, size of connection with grid or peak demand of consumer
• Volumetric component: reflects how much the consumer used
2 Smart tariff design - principles
Smart tariff design can’t wait

Important to start implementing appropriate network tariffs where they’re not already in place

• Regulatory cycles last for 4-5 years
• Foundation for retailers and aggregators to introduce smart tariff products
• Educate consumers and gain experience
What can we achieve with smart tariff design?

- Maximise utilisation of existing grid and minimise future investment
- Empower consumers to make good decisions
- Ensure that everyone pays their fair share
High-level principles for smart network tariffs

1. A consumer should be able to connect to the grid for no more than the cost of connecting to the grid

2. Consumers should pay for grid services in proportion to how much and when they use the grid

3. Consumers who generate electricity should cover their fair share of grid costs
3 Smart tariff design - examples
Smart tariff design

- Recognises how much, when, and where consumers use the grid
- Vary from time-of-use to real-time pricing
Smart tariff design can deliver demand response, downwards and upwards

Tempo tariff in France

EDF's Tempo Tariff has Both Time-varying and Critical Peak Components

Note: HC refers to the night period (10pm - 6am), and HP to the day period (6am - 10pm).
Hawaii – an exemplar for Europe
Time-of-use tariff in Hawaii

Hawaii Time of Use Rate Over 24-hour Period
Examples of smart network tariffs

- **Germany – ToU for controllable loads**
  - Objective: electrification of heating, increase network utilisation
  - Discounted night charge

- **Cornwall – Sunshine tariff pilot**
  - Objective: relieve congestion at hours of peak solar production in the summer
  - Significantly lower network price during these hours
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4 Network charges - State of play in Europe
Recent trends are troubling

- Many MS are shifting toward fixed charges:
  - Germany: increased by 50% for households
  - Spain: doubled within two years
  - Netherlands: only fixed charges since 2009
- Policy-driven changes
Problem: the fixed fees in network charges
Fixed tariffs impede the energy transition
Fixed fees take the power out of consumers’ hands
Fixed fees do not promote efficiency or equity

• Consumers who use grid efficiently pay the same as those that who do not

• Consumers who use the grid during hours of low demand pay the same as those who use the grid at peak system demand
Fixed fees shift costs from high- to low-usage consumers

Low-usage consumers pay disproportionately more

Source: German distribution system operator, network fees in 2018
Germany: Historical development of network fees for households

Network bill for low-usage consumers almost doubled

Source: Distribution network operator EWE
What about other industries?

We pay for other “grids” in volumetric prices
Network companies can easily recover costs without fixed charges

- Ensure financial stability through economically efficient prices and appropriate regulatory frameworks
  - These include revenue regulation and decoupling, and performance-based regulation
  - Break the link between sales and profits
It’s important to start implementing appropriate tariff designs now.
Recommendations for different consumer classes

- Residential consumers: volumetric charges as default; ToU tariffs optional
- New, large, controllable loads (e.g., EVs), small industrial consumers: ToU tariffs as default, CPP if smart technology is in place

⇒ Important to link tariff choice with its likely impact
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Conclusions

• Tariff design is an integral part of public policy goals that should support, and not impede, the energy transition
• Smart tariffs empower consumers to take right action
• Help to optimize use of existing network assets and minimise future investments
Resources from RAP

- Cleaner, Smarter, Cheaper: Network tariff design for a smart future
- Designing Tariffs for Distributed Generation Customers
- Smart Rate Design for a Smart Future
- Designing Distributed Generation Tariffs Well
- Rate Design Where Advanced Metering Infrastructure Has Not Been Fully Deployed
- Revenue Regulation and Decoupling: A Guide to Theory and Application
- Time-Varying and Dynamic Rate Design
About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org

Christos Kolokathis
Associate
ckolokathis@raponline.org

Andreas Jahn
Senior Associate
ajahn@raponline.org
Existing networks are under-utilised