



energy authority

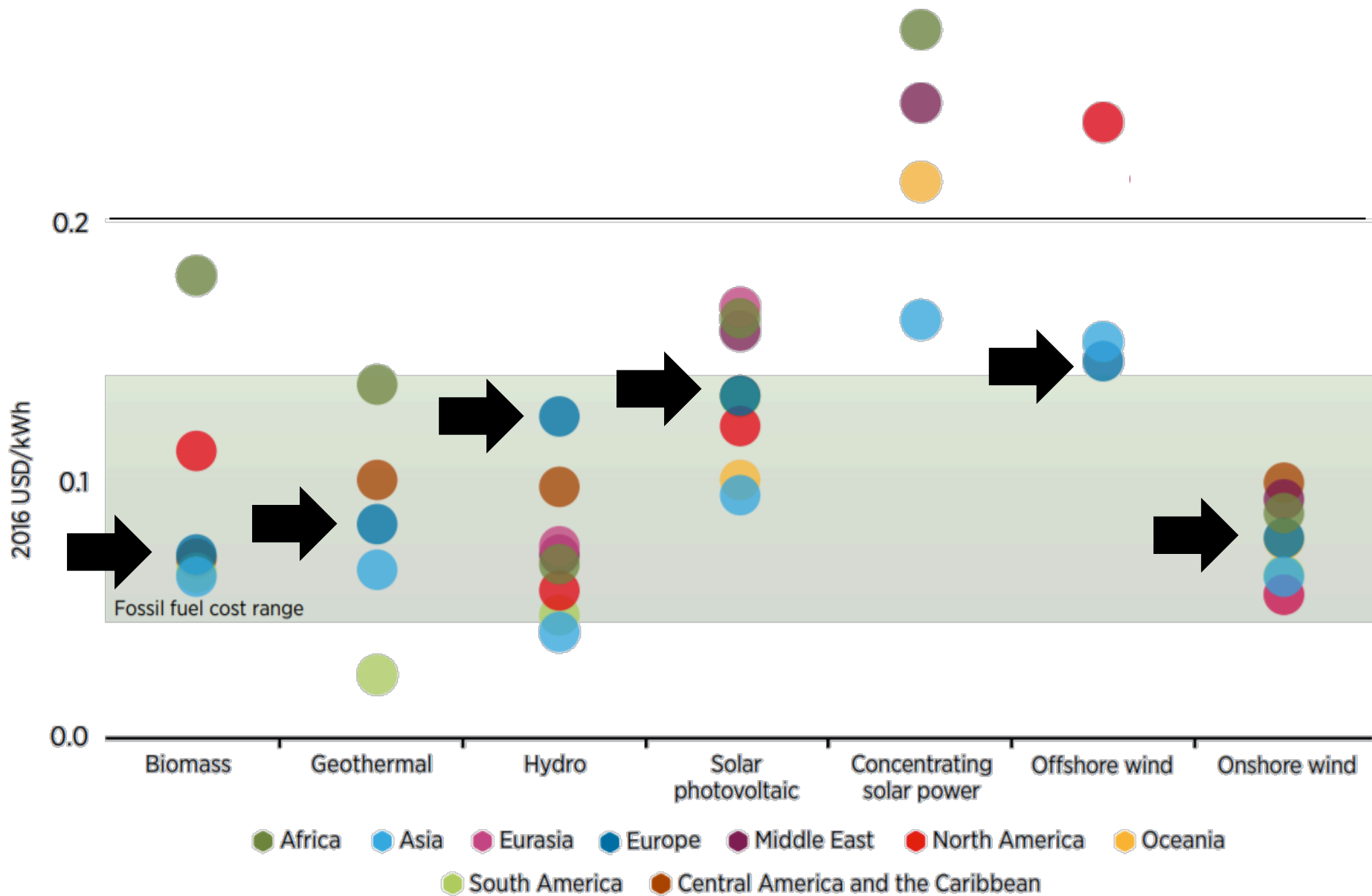
Competitive bidding for a market premium in Finland

Vaasa EnergyWeek, 2019-03-19

Competition Adviser Roland Magnusson, Ph.D. (Econ.), M.Sc. (Tech.)



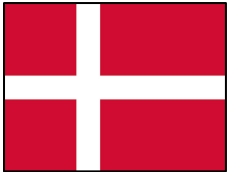
Fair energy

Regional weighted average
levelized cost of electricity by
renewable technology



Source: IRENA (2017): Renewable Power Generation Costs in 2017

Support paid to electricity generation based on renewables in 2017

Member state	Onshore wind	Offshore wind	Photo-voltaic	Biomass
	49 EUR/MWh 4,0 TWh			19 EUR/MWh 1,6 TWh
	65 EUR/MWh 86 TWh	159 EUR/MWh 17 TWh	264 EUR/MWh 35 TWh	154 EUR/MWh 42 TWh
	26 EUR/MWh 8,8 TWh	65 EUR/MWh 4,8 TWh	95 EUR/MWh 0,3 TWh	36 EUR/MWh 5,0 TWh

Source: Council of European Energy Regulators (CEER)

International comparison

Comparison of recent technology neutral auctions (1)

Member state	Auction end date	Budget	Number of bids	Bid volume, in TWh/a	Bid volume, in TW
Finland	12/2018	1.4 TWh/a	n = 26	4.1 TWh/a wind 0 TWh/a other	.
Denmark	11/2018	EUR 34 milj. (DKK 254 milj.)	n = 17	.	260 MW wind, 280 MW PV
Germany	04/2018	200 MW	n = 54	.	154 MW wind, 241 MW solar
	11/2018	200 MW	n = 50	.	11 MW wind, 308 MW solar
Poland	11/2018	(~32 TWh 2020-2035)	n/a	n/a	n/a

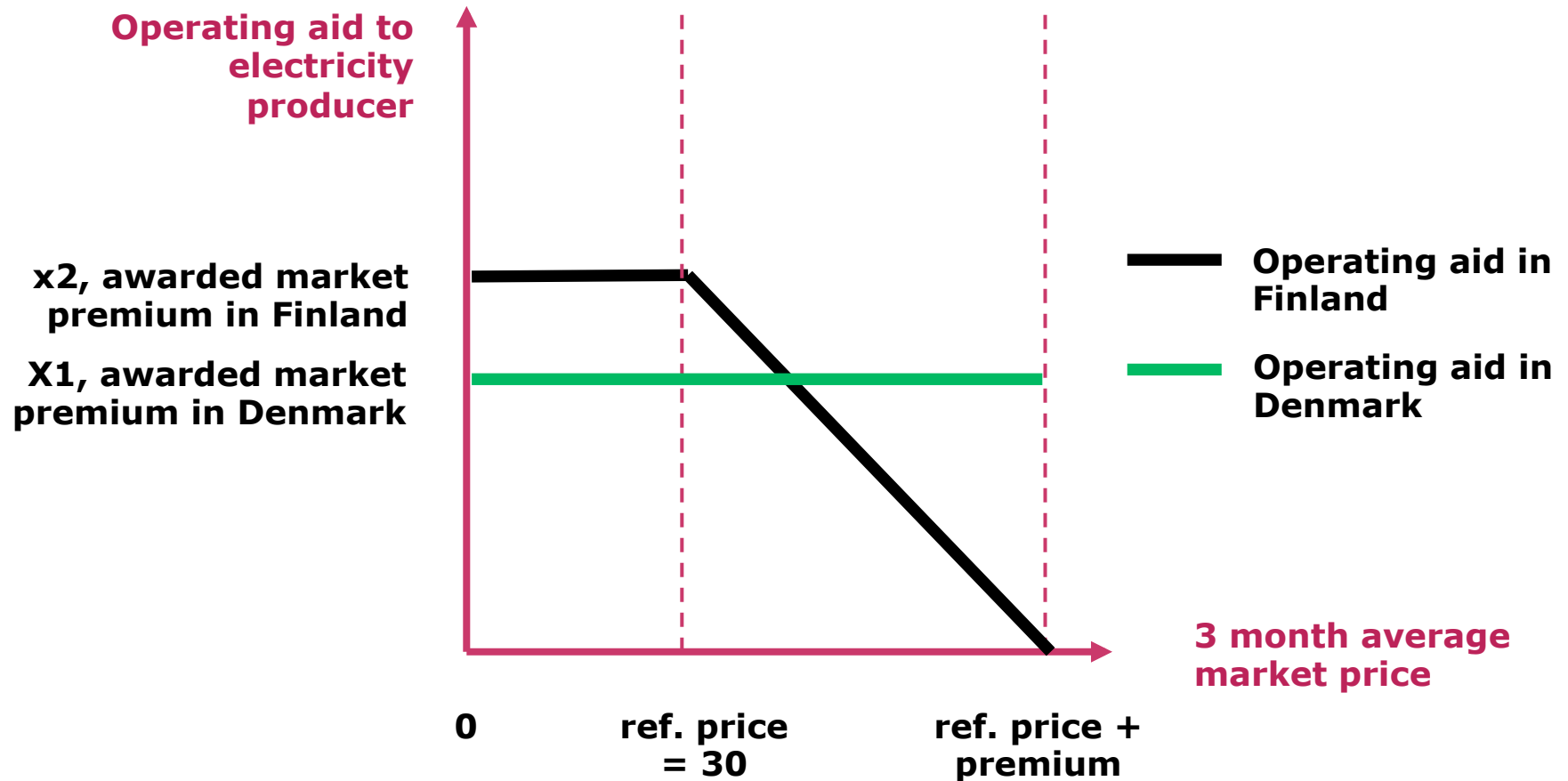
Comparison of recent technology neutral auctions (2)

Member state	Auction end date	Accepted bids	Accepted bids, in TWh/a	Accepted bids, in MW	Premium, in EUR/MWh	Reference value, EUR/MWh
Finland	12/2018
Denmark	11/2018	3 wind, 3 solar	.	165 MW wind, 101 MW solar	3,1	.
Germany	04/2018	32	.	210 MW solar	.	46,7
	11/2018	36	.	201 MW solar	.	52,7
Poland	11/2018	31	2,6 TWh/a (wind)	(~ 1GW)	.	45,5

Member state	Finland	Denmark
Eligible technologies	Wind, PV, biogas, biomas, wave	Wind, PV
Auction type	Pay-as-bid	Pay-as-bid
Bid contents	1 Premium, EUR/MWh 2 Yearly generation, MWh/a	1 Price premium, EUR/MWh 2 Capacity, MW
Duration of support	12 years	20 years
Building permit is required for eligibility	Yes	Yes
Grid connection agreement is required for eligibility	Yes	No
Construction bond	16 EUR/MWh	~23 EUR/MWh
Underproduction compensation	Yes	No

A simplified illustration of how the level of operating aid is determined in the Finnish scheme vis-à-vis the Danish scheme

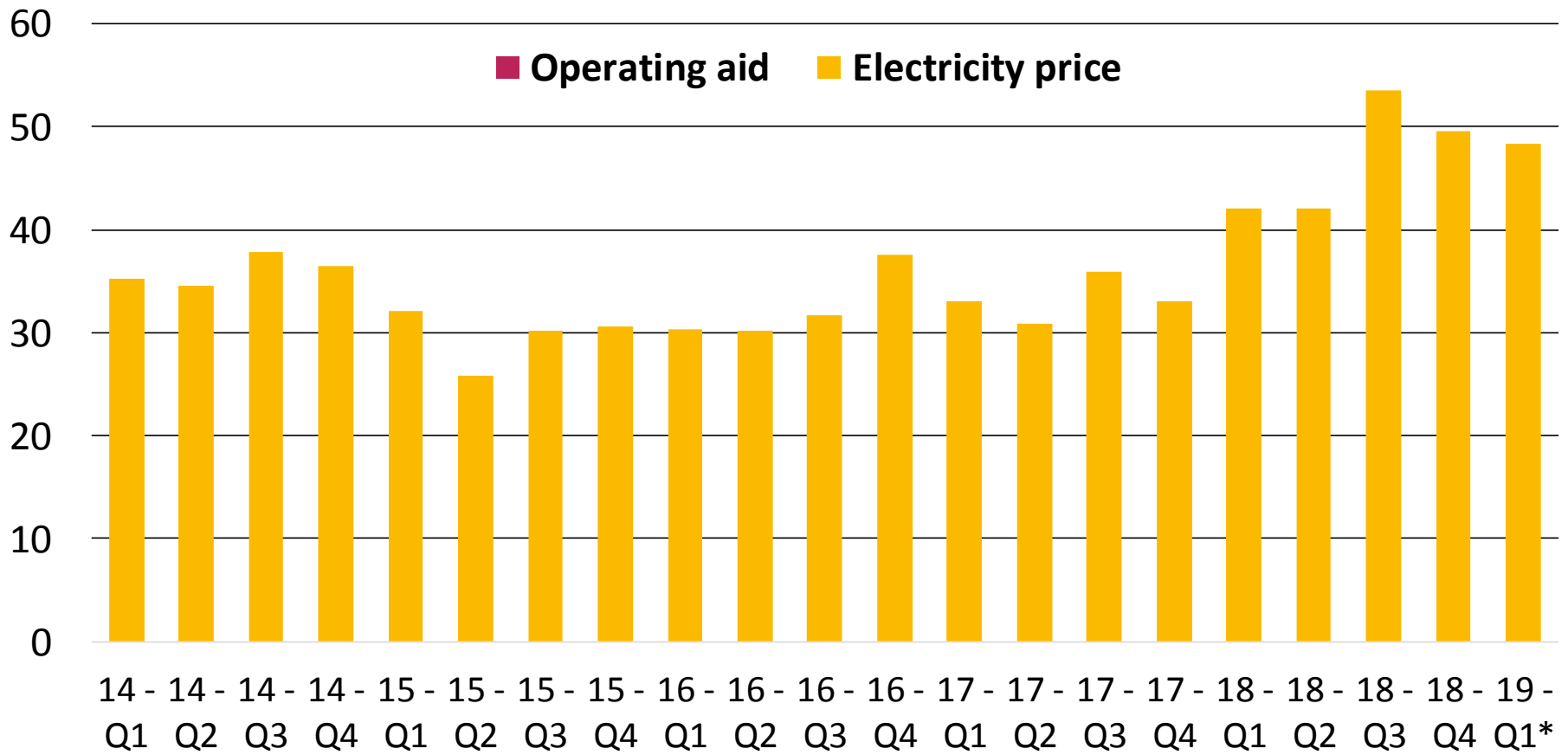
Level of support in Finland vis-à-vis Denmark



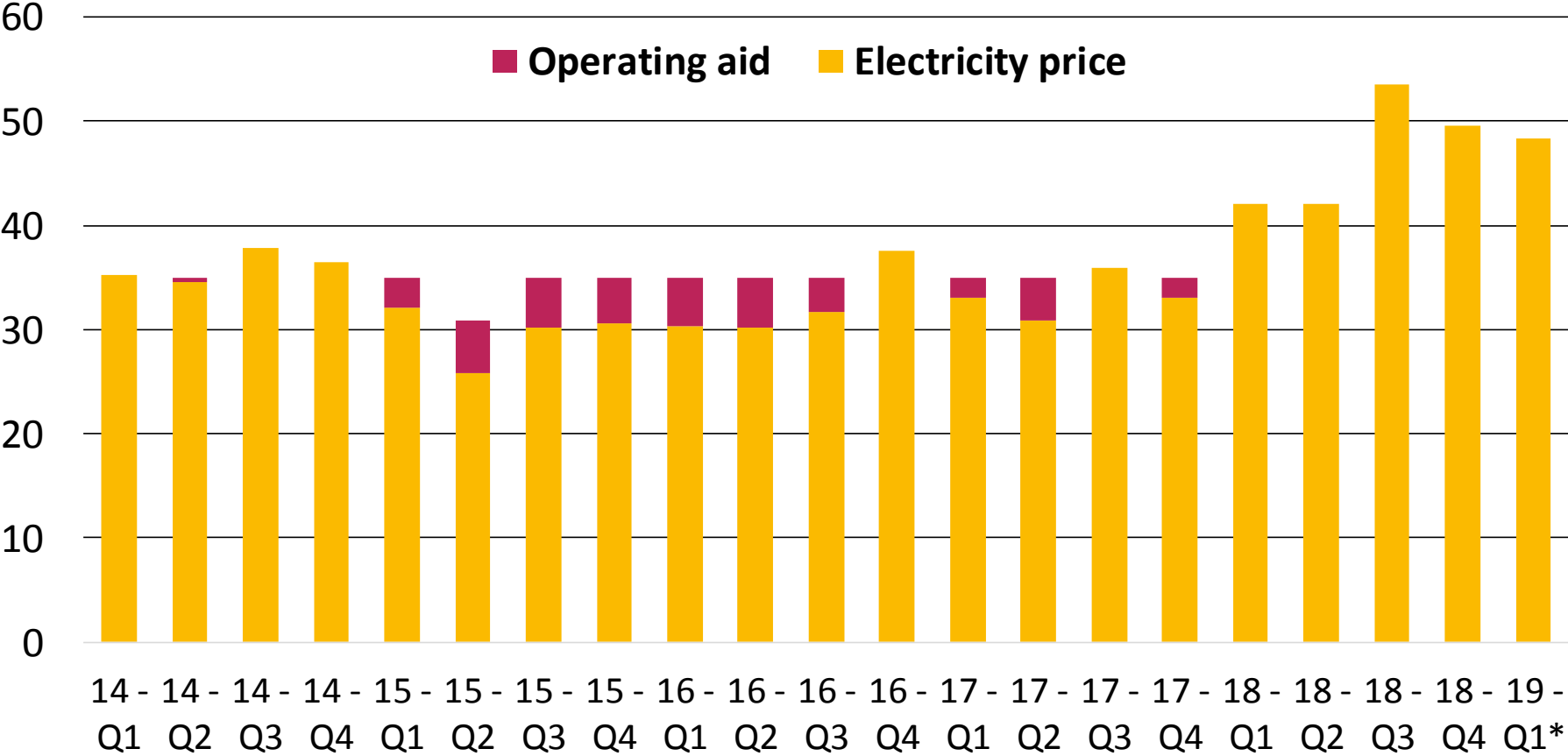
A simplified illustration of how the level of operating aid depends on the market price in the Finnish scheme

The x-axis shows the 3 month average market price on Nord Pool Elspot Day Ahead market (market area Finland)

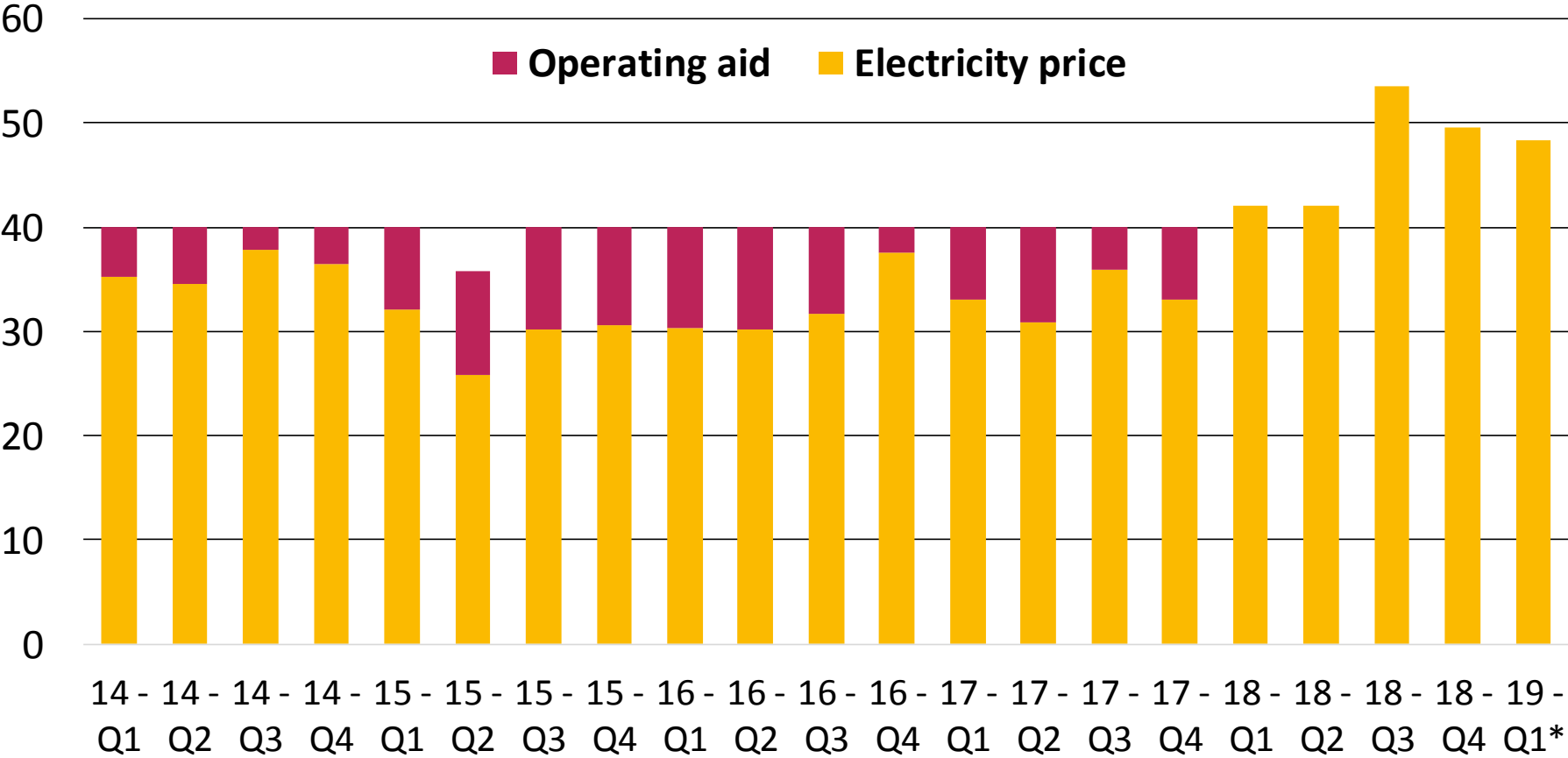
No premium



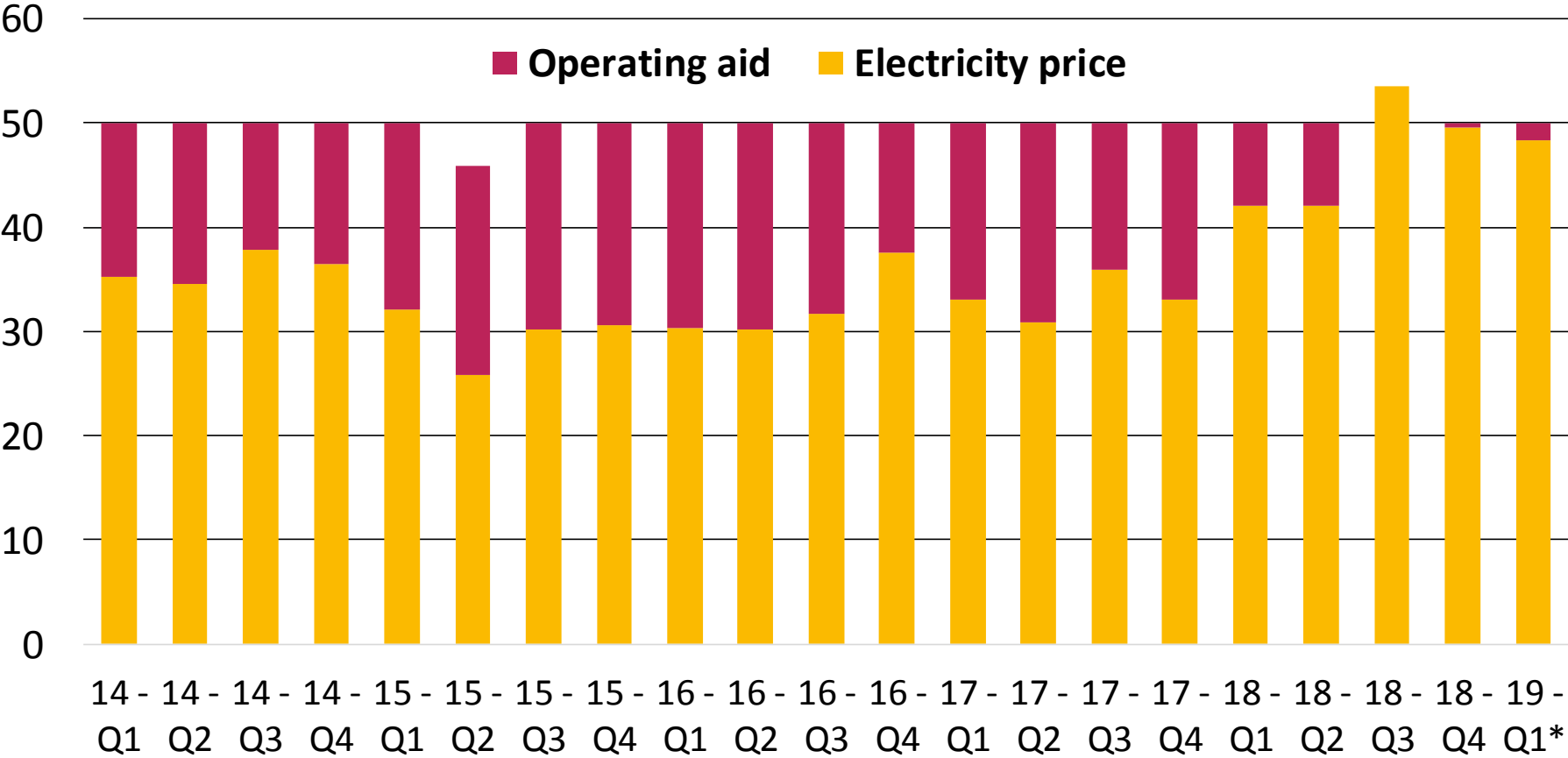
Accepted premium of $x = 5$ euros



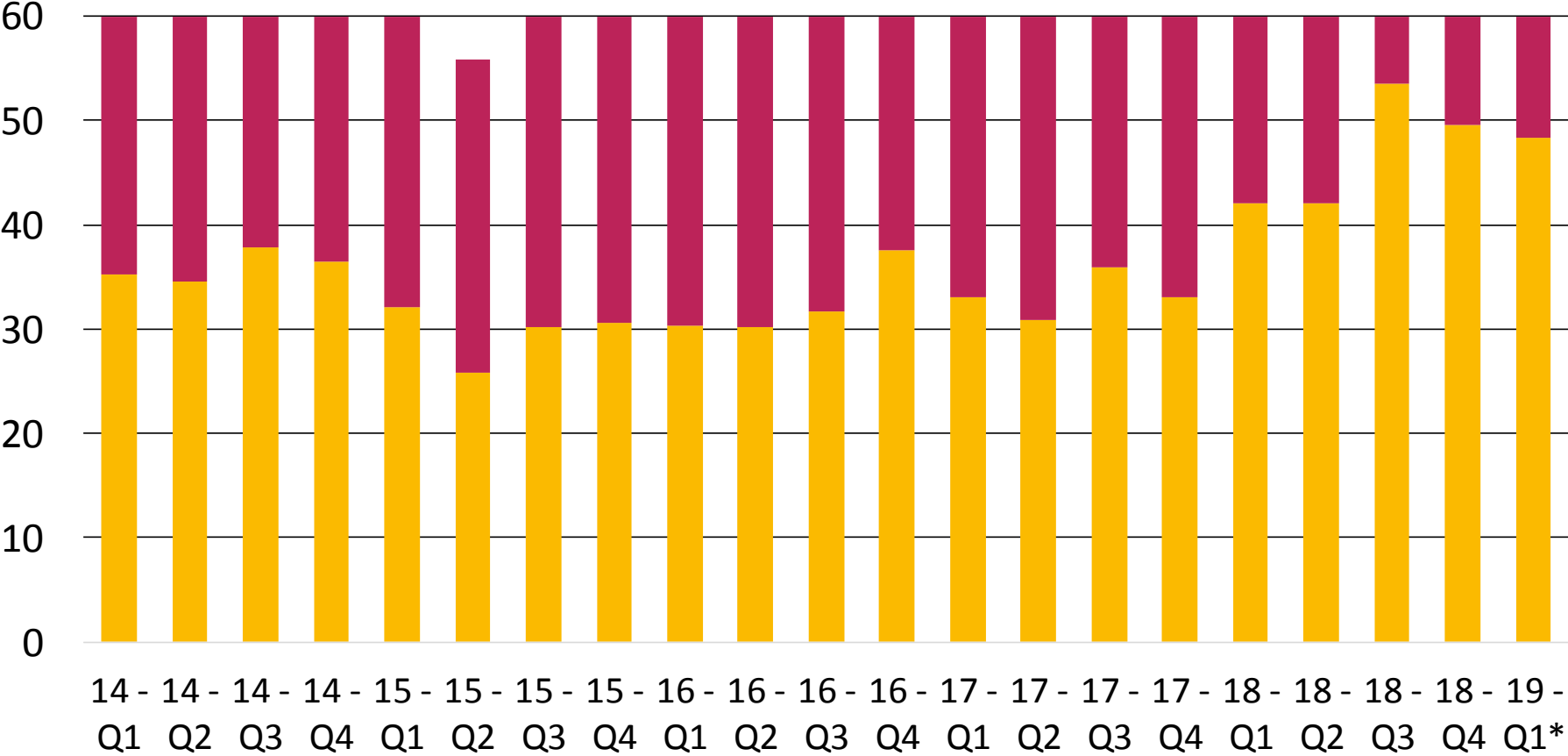
Accepted premium of $x = 10$ euros



Accepted premium of $x = 20$ euros



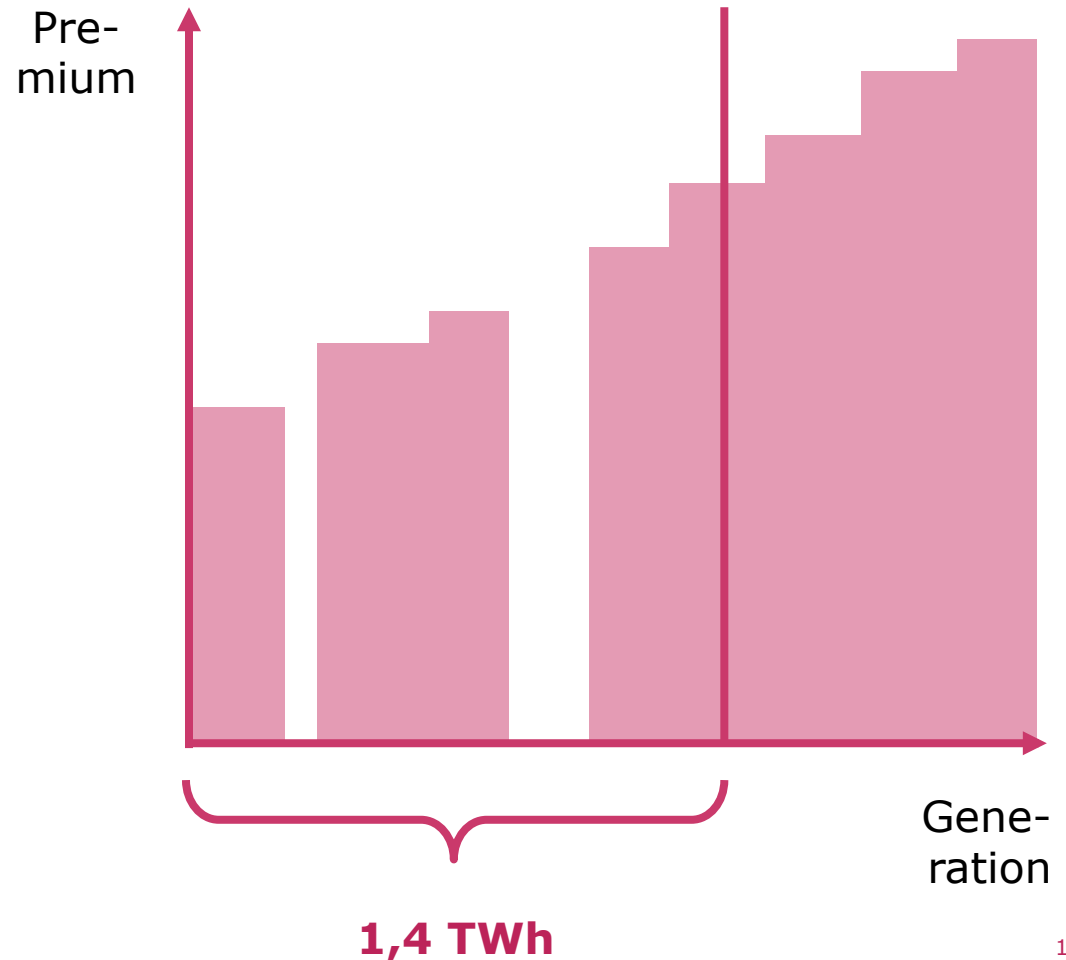
Accepted premium of $x = 30$ euros



Selected elements of the Finnish scheme

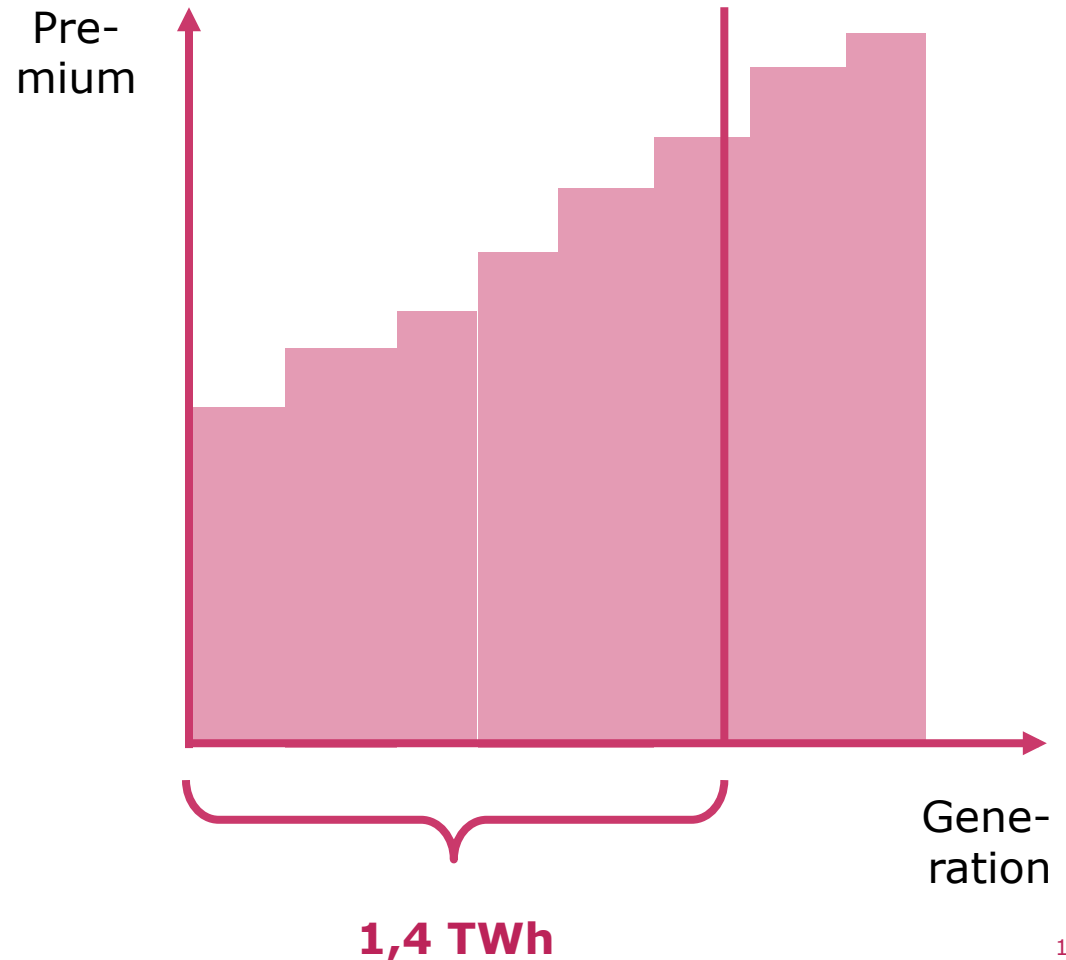
How is the outcome of the auction determined?

- Bids can be accepted for a maximum of 1,4 TWh
- Partial acceptance is not possible
- Each accepted electricity producer receives a premium in accordance with its bid, i.e. pay-as-bid
- Bids that fail to meet the eligibility criteria are excluded

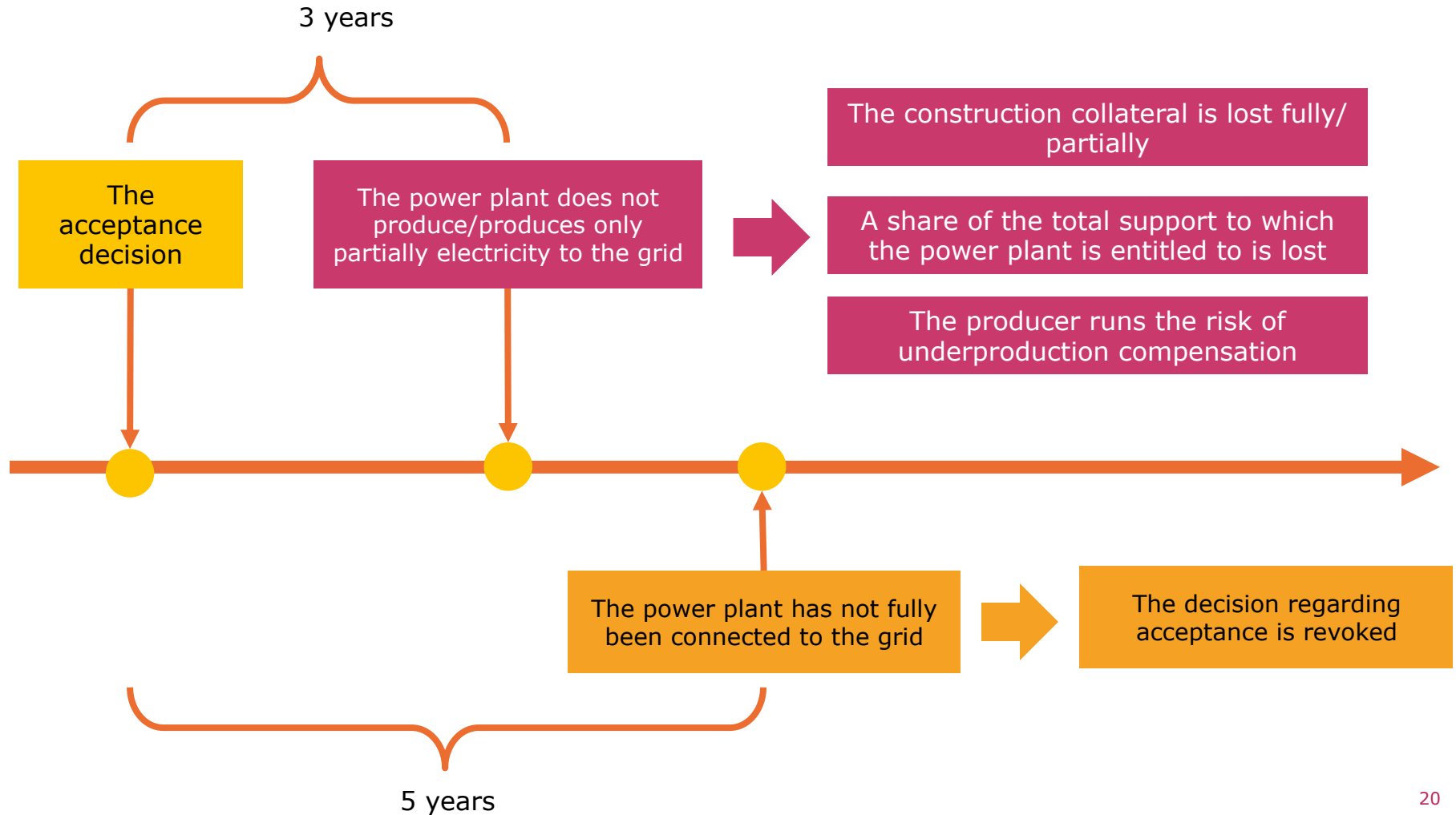


How is the outcome of the auction determined?

- Bids can be accepted for a maximum of 1,4 TWh
- Partial acceptance is not possible
- Each accepted electricity producer receives a premium in accordance with its bid, i.e. pay-as-bid
- Bids that fail to meet the eligibility criteria are excluded



Incentives during construction





energy authority

Thank you for your attention!

Competition advisor Roland Magnusson



roland.magnusson@energiavirasto.fi

www.energiavirasto.fi