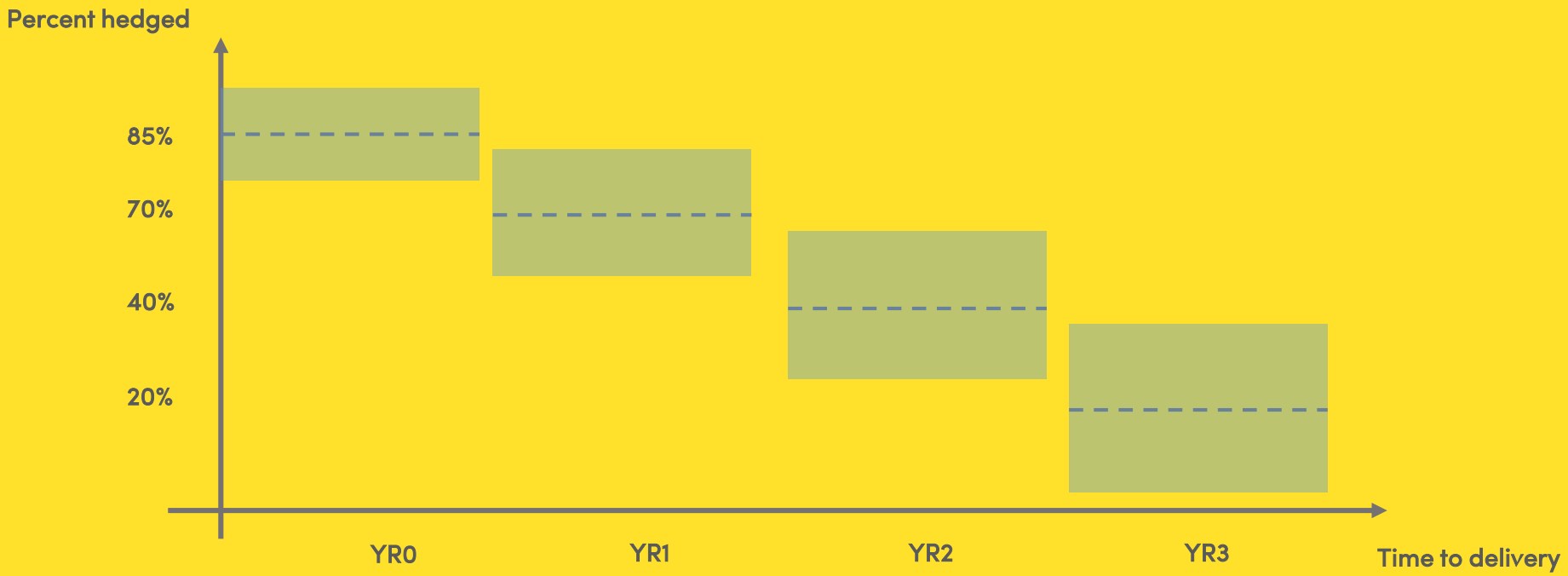
Hedging strategies for wind SPVs.

"You have the exposure before the ink is dry on the contract"

Or
even
earlier!

The typical hedging “strategy”



(Montel) German utility Uniper increased its forward sales of 2020 German power 15 percentage points in the third quarter, locking in prices EUR 2 higher, after previously holding out for higher prices, it said on Tuesday.

By the end of September, Uniper had sold 85% of its 2020 production and locked in a price between 42-46 EUR/MWh, it added in its latest financial report.

In the previous quarter, Uniper told Montel it had reversed some hedges as it expected to fetch higher prices at a later point.

The company's German baseload hedging figures include only hydropower, of which Uniper operates a total capacity of 2 GW with yearly power output of around 3 TWh.

For 2021, Uniper's hedging rate rose 25 percentage points quarter on quarter to 40%, while the average price increased to EUR 48-52/MWh, also EUR 2 higher compared to three months earlier.

For the current year, the hedging rate remained unchanged at 85%, with prices also unchanged in a EUR 23-27/MWh range.

The benchmark Cal 20 contract averaged EUR 48.54/MWh over the first nine months of this year and EUR 48.80/MWh over the third quarter. The Cal 21 last settled at EUR 47.44/MWh on the EEX.

Nordic hedging

For its Nordic power production from hydropower and nuclear plants, **Uniper remained hedged at 60% and prices of EUR 25-29/MWh for 2020** – unchanged quarter on quarter.

There was also no change to its 2021 hedging of around 10% at EUR 29-33/MWh.

The firm previously said it was holding back hedging for higher prices, similar to its earlier strategy for the German power market.

Sales for the current year increased 5 percentage points quarter on quarter to 80% at EUR 23-27/MWh, about EUR 1 higher than Q2.
On Monday, front-year Nordic power closed at EUR 38.05/MWh, while the 2021 contract stood at EUR 34.44/MWh.

The firm operates 3 GW of Swedish capacity ranged across hydropower facilities and nuclear plants.

(Montel) Fortum had hedged 60% of its Nordic power output for 2020 at an average price of EUR 31/MWh by the end of the June, the Finnish utility said on Friday.

The group also hedged 80% of its remaining 2019 output at an average price of EUR 33/MWh, according to its interim financial report.

By comparison, the group had hedged 55% of its 2020 output at an average price of EUR 31/MWh and 75% of its remaining 2019 output at EUR 32/MWh by the end of March.

While hedging prices have remained stable during the second quarter, they are still considerably below current market prices, with the 2020 Nordic power contract closing at EUR 37.75/MWh on Thursday.

The price area difference contracts (Epad) indicate prices of EUR 42.55/MWh in Finland and EUR 39.15/MWh in Sweden's SE3 price area.

Most of Fortum's production is located in Finland and Sweden.

The group's Nordic power production volumes fell 0.9 TWh to 22.7 TWh in the first half, primarily due to a 1.2 TWh drop in hydropower output to 10.2 TWh. This was partially offset by a 0.3 TWh rise in nuclear generation to 12.2 TWh, according to the report.

Its achieved power price was EUR 36.7/MWh in the six months to June, up from EUR 33.4/MWh in the same period last year.

Profits drop
The Finnish group posted an operating profit of EUR 542m for the first six months, down 27% from EUR 738m in January-June 2018.

It attributed the weaker result to a negative impact of EUR 98m from items affecting comparability, mainly from technical changes in the Finnish nuclear fund and from the fair-value change of non-hedge-accounted derivatives, it said.

Vattenfall sells 49% of 2020 Nordic output at EUR 32/MWh

(Montel) Vattenfall had sold 49% of its Nordic power production for 2020 at an average price of EUR 32/MWh by the end of June, the Swedish utility said on Friday.

The hedging ratio was lower for year-ahead power than a year ago, when the company had sold over 60% in advance, albeit at a lower price of EUR 27/MWh, according to its interim financial report.

The company had also hedged 69% of its remaining 2019 production at EUR 29/MWh and 28% of its 2021 output at EUR 33/MWh, Vattenfall said.

In comparison it had sold 40% of its 2020 output at EUR 31/MWh and 23% of its 2021 output at EUR 33/MWh by the end of March.

Utilities usually slow down their forward sales of power if they anticipate prices to rise, while they speed up their hedging in times of falling prices, to lock in sales at more profitable levels.

The Nordic power 2020 futures contract closed on Thursday at EUR 37.25/MWh on the Nasdaq Commodities exchange.

Prices for 2020 and 2021 Nordic power have risen 14-25% from the levels seen at the end of the second quarter of 2018, mainly owning to higher emissions prices, according to Vattenfall.

Average Nordic spot prices however were 8% lower, at EUR 35.8/MWh during the second quarter of 2019 compared with the corresponding period in 2018, mainly owing to a strong hydrological balance.

Strong trading result
The group's power generation reached 66.8 TWh in the period January-June, up from 66.6 TWh in the first half of last year, as wind and power generation from fossil fuels offset lower hydro and nuclear output.

Vattenfall's operating profit for the period under review climbed SEK 1.2bn to SEK 11bn (EUR 1.05bn) from SEK 9.8bn, amid a positive contribution from price hedges and the trading operations, Vattenfall said.

The firm's saw its operating profit from trading operations more than quadruple year on year to SEK 944m, from SEK 203m in H1 2018.

Last quarter, the company had already booked a surge in its trading operations' profit year on year butdeclined to comment on the reasons.

ENBW hedges 50-80% of 2021 power output

(Montel) German utility ENBW has forward sold 50-80% of its 2021 power output, up 10 percentage points from the end of the second quarter, the company' said on Friday.

The firm hedged had sold up to 40% of its 2022 production, compared to 35% in the previous quarte

ENBW's hedging levels for 2020 remain unchanged at 80-100%. It does not disclose prices for its hedges.

The German front-year power contract last stood at EUR 45.85/MWh

Improved earnings

The company reported a 7% increase in its adjusted earnings to EUR 1.67bn in the first nine months of 2019 amid higher power prices and improved generation from wind assets.

Adjusted earnings before interest, taxes, depreciation and amortisation (Ebitda) rose 1% to EUR 193m on the back of higher forward prices for electricity in the wholesale market, the company said.

However, extended maintenance periods at the nuclear units Neckarwestheim 2 (1.3 GW) and Philippsburg 2 (1.4 GW) hit revenues.

Adjusted Ebitda at ENBW's renewables unit soared 39% to EUR 299m.

"The improvement is due to earnings contributions from the onshore wind farms acquired in Sweden at the end of last year and to the overall improvement in wind conditions at onshore and offshore wind farms in Germany," the company said.

ENBW expects the full-year Ebitda in a range between EUR 2.35-2.5bn, mainly driven by its renewable and grid activities.
ENBW hedges 50-80% of 2021 power output

Cez hedges 78% of 2020 power output at EUR 43.20/MWh

(Montel) Czech utility Cez increased its forward sales of 2020 by five percentage points in the third quarter, locking in prices EUR 1 higher than in the first half of the year, it said on Tuesday.

By the end of September, Cez had sold 78% of its power generation for 2020 at EUR 43.20/MWh, it said in its latest financial report.

Further out, the company hedged 48% of 2021 output at EUR 45.40/MWh and around 20% of 2022 production at EUR 46.70/MWh by the end of the January-September period.
It had also sold 4% of its 2023 output at EUR 42.30/MWh.

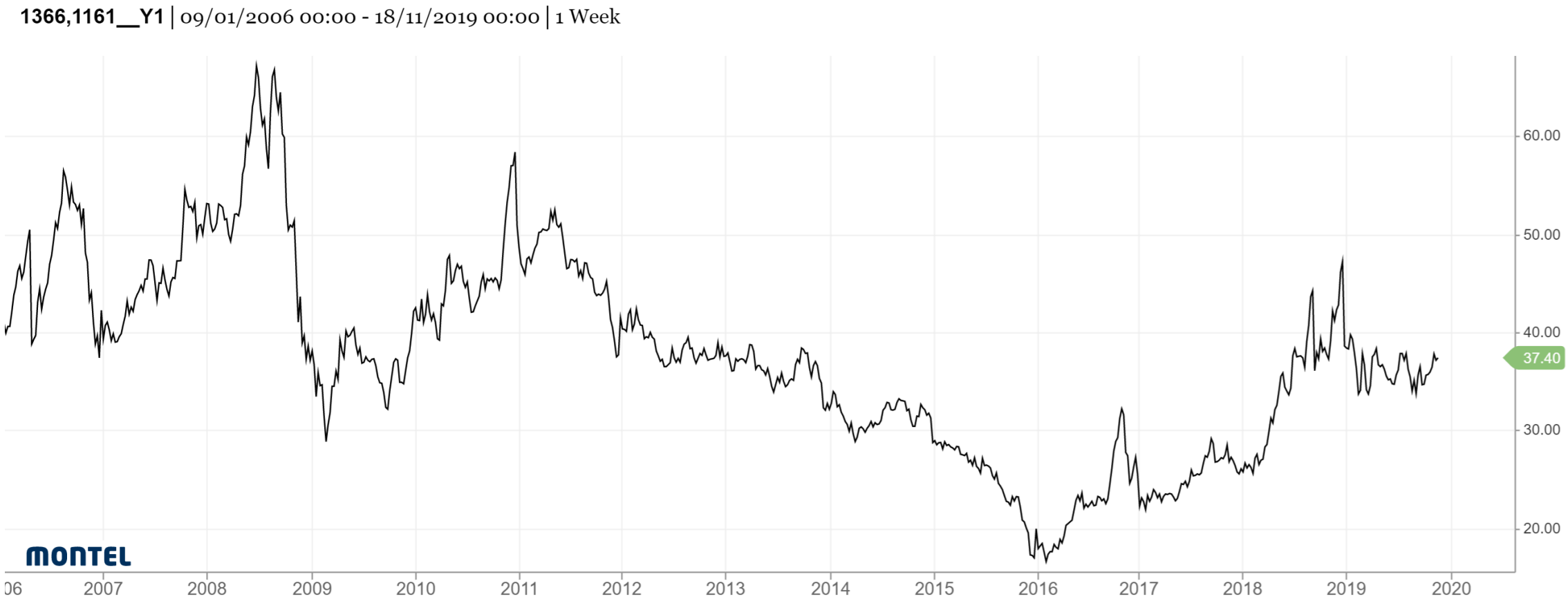
Generation rises

Meanwhile, the company's power generation in the first nine months of 2019 rose 2% year on year to 42.2 TWh amid improved nuclear availability and higher output at its coal and gas-fired plants.
The firm expected to produce 65.5 TWh in 2019, a 6% rise from a year ago.

Cez's earnings before interest and tax rose 33% year on year to CZK 22.1bn (EUR 0.87bn) in the nine six months of 2019 amid a combination of higher generation and rising power prices, it said.
The firm sold 241 TWh of electricity on the wholesale market in January-September, down 1% from the same period in 2018. The firm bought 228 TWh in the same period, it added.
Cez is the Czech Republic's bigger power utility with a nuclear, gas and coal-fired fleet totalling 15 GW.

Fits the balance sheets of the large energy companies, not the Special Purpose Vehicles used by infrastructure funds and renewable energy investment companies.

Nordic front year



YEAR	NOK	SEK	DKK	EUR	DEPTH										
FUTBLYR-20	37.65	1	37.85	2	37.90	37.90	37.70	37.70	0.30	0.80	1	15	37.40	11:28
FUTBLYR-21	34.52	3	34.65	2	34.70	34.70	34.60	34.60	0.15	0.44	1	7	34.45	11:09
FUTBLYR-22	32.96	2	33.05	1	-	-	-	-	-	-	0	0	32.90	11:23
FUTBLYR-23	32.70	2	32.95	1	-	-	-	-	-	-	0	0	32.80	10:34
FUTBLYR-24	32.00	1	32.55	1	-	-	-	-	-	-	0	0	32.30	09:55
FUTBLYR-25	-	0	32.55	1	-	-	-	-	-	-	0	0	32.50	11:05

YEAR	NOK	SEK	DKK	EUR	DEPTH										
FUTBLYR-20	37.70	1	37.80	2	37.90	37.90	37.90	37.90	0.50	1.34	4	11	37.40	09:57
FUTBLYR-21	34.50	3	34.65	2	34.70	34.70	34.70	34.70	0.25	0.73	1	1	34.45	09:52
FUTBLYR-22	32.90	2	33.10	1	-	-	-	-	-	-	0	0	32.90	09:51
FUTBLYR-23	32.65	1	33.00	3	-	-	-	-	-	-	0	0	32.80	09:27
FUTBLYR-24	32.00	1	32.55	1	-	-	-	-	-	-	0	0	32.30	09:55
FUTBLYR-25	31.28	1	32.55	1	-	-	-	-	-	-	0	0	32.50	08:20
FUTBLYR-26	-	0	-	0	-	-	-	-	-	-	0	0	32.54	07:00
FUTBLYR-27	-	0	-	0	-	-	-	-	-	-	0	0	32.59	07:00
FUTBLYR-28	-	0	-	0	-	-	-	-	-	-	0	0	32.59	07:00
FUTBLYR-29	-	0	-	0	-	-	-	-	-	-	0	0	32.59	00:19

Euros – not megawatthours!


Customer
Acme Energy
All risks
Related to
energy trading
are located at
customer
Insourcing
Outsourcing
All risks
related to energy
trading are located
at
Acme Energy
Balancing Risk
Handling of
Balancing
Financial Risk
Pricing and
hedging
Volume & Profiling Risk
Pricing and hedging for with a
profile and floating volume

Traditional PM providers

Wind park owner

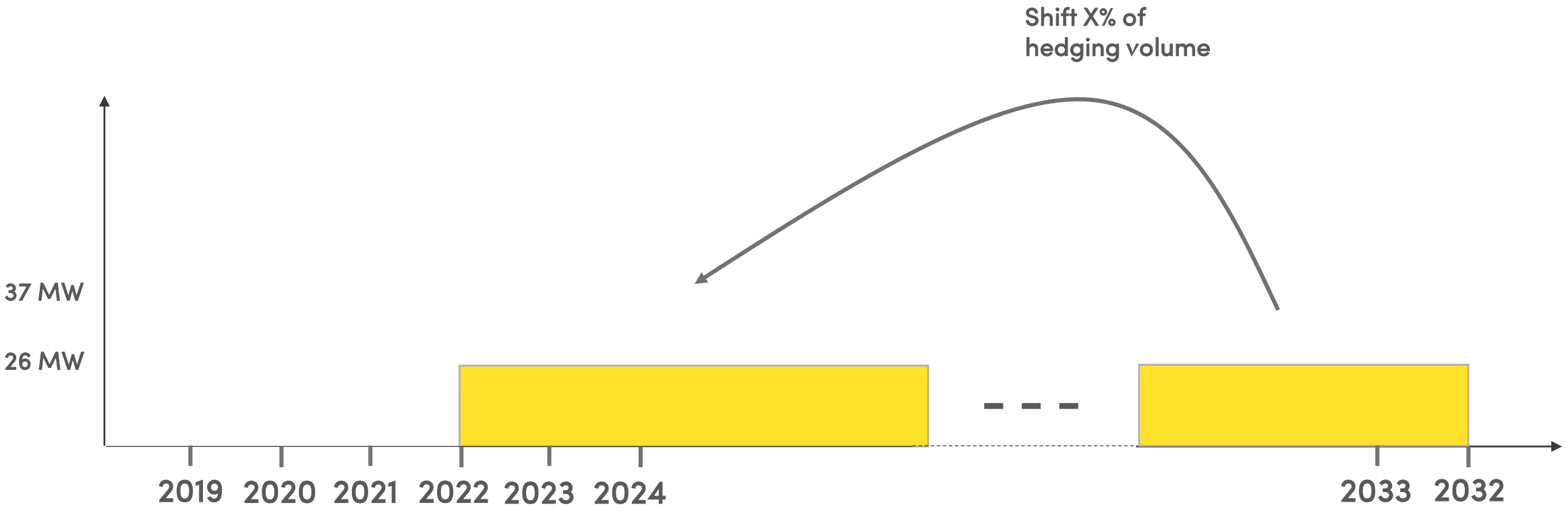
All revenues from risk are with the owner/investor

Balancing & Flex markets

Volume & profile

Merchant trading & Hedging

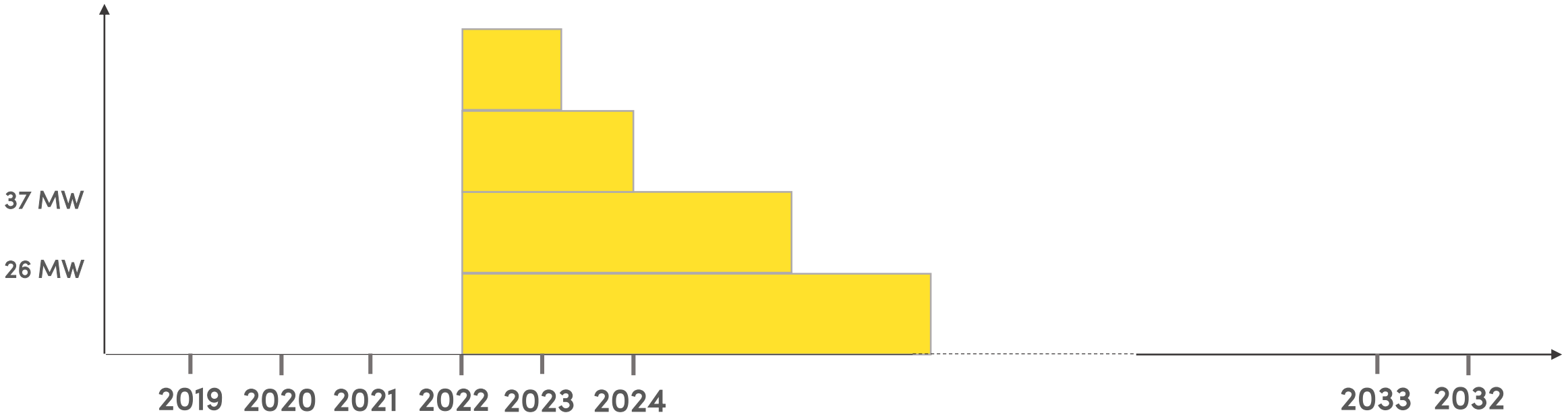
Huge spreads in year 6-10 so over- hedge in front instead!



Secured volume in standard future contracts at fixed price

Production: P50 = 326 GWh/y (⇔ 37MW),
70% of P50 = 228 GWh/y (⇔ 26 MW),

Same volume as in 10 year PPA … or less



Secured volume in standard future contracts at fixed price

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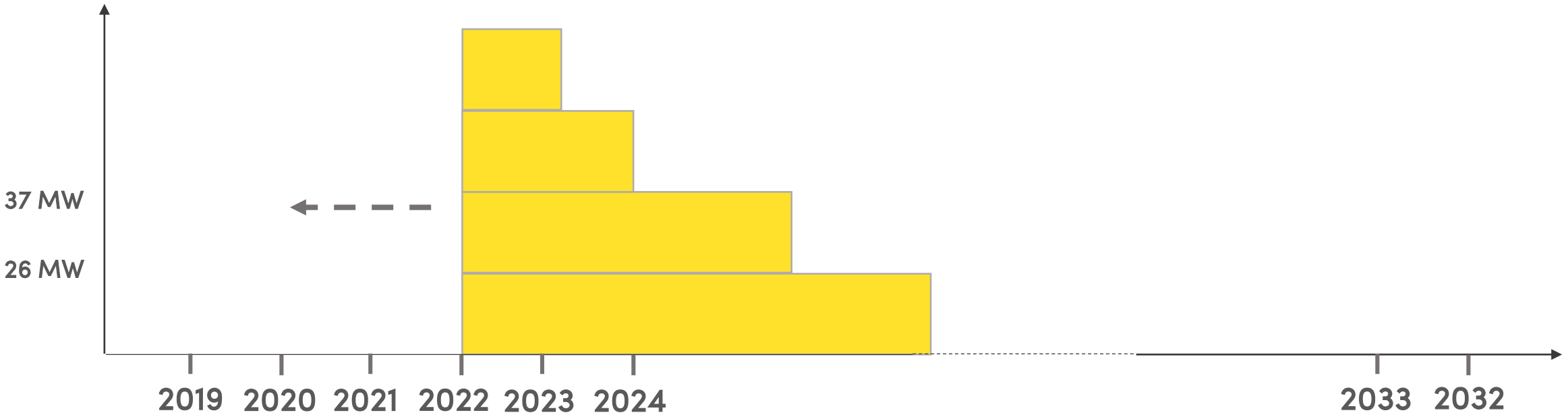
70% of P50 = 228 GWh/y (⇔ 26 MW),

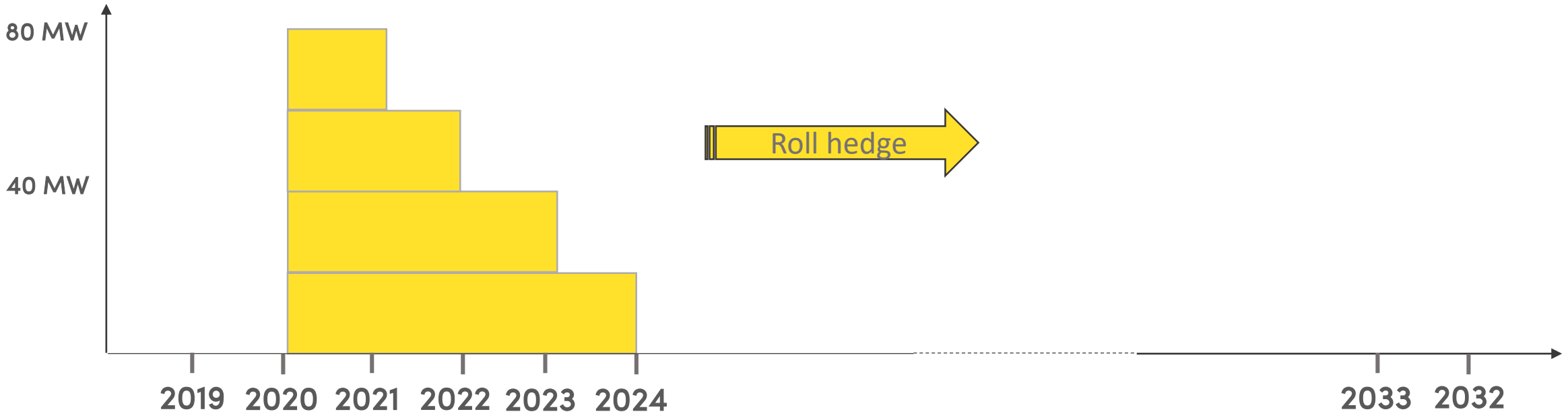
You can even use the high correlation and good liquidity in the year before actual production!



Secured volume in standard future contracts at fixed price

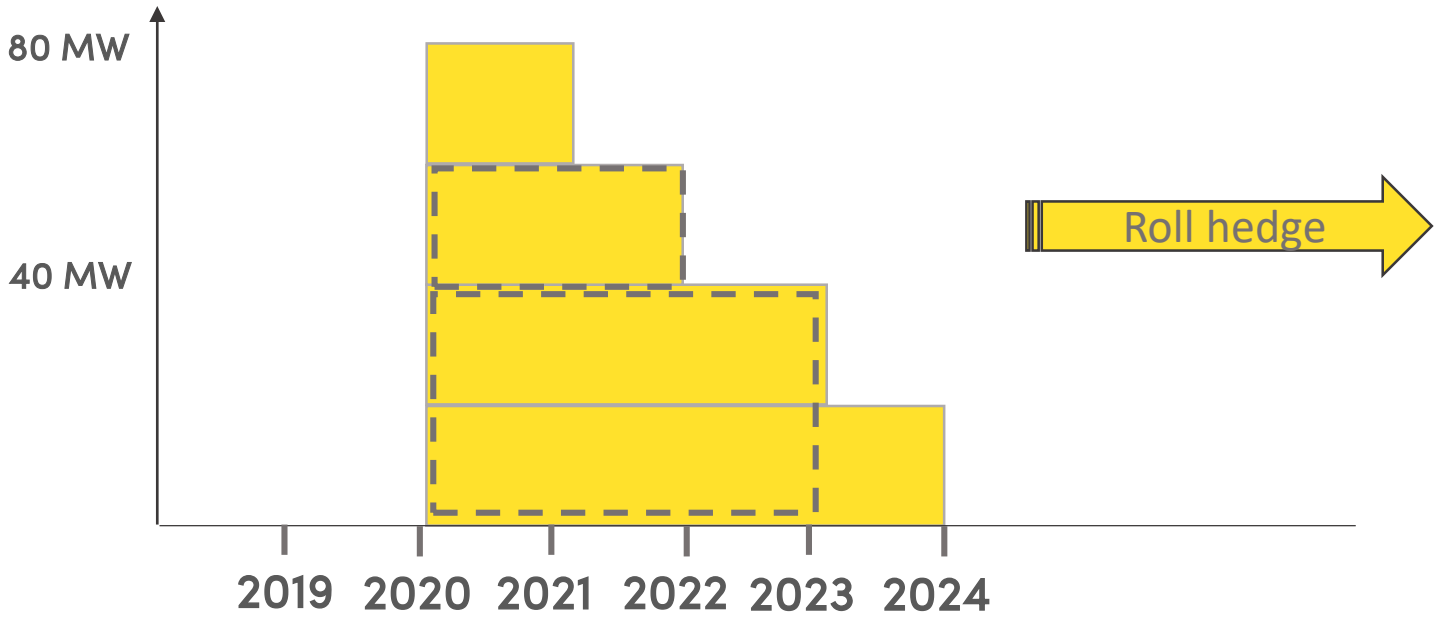
Production: P50 = 326 GWh/y (⇔ 37MW),
70% of P50 = 228 GWh/y (⇔ 26 MW),

This example: 1 750 GWh hedged compared to 2 280 GWh in “Vattenfall/Uniper/Axpo/Gogle PPA”

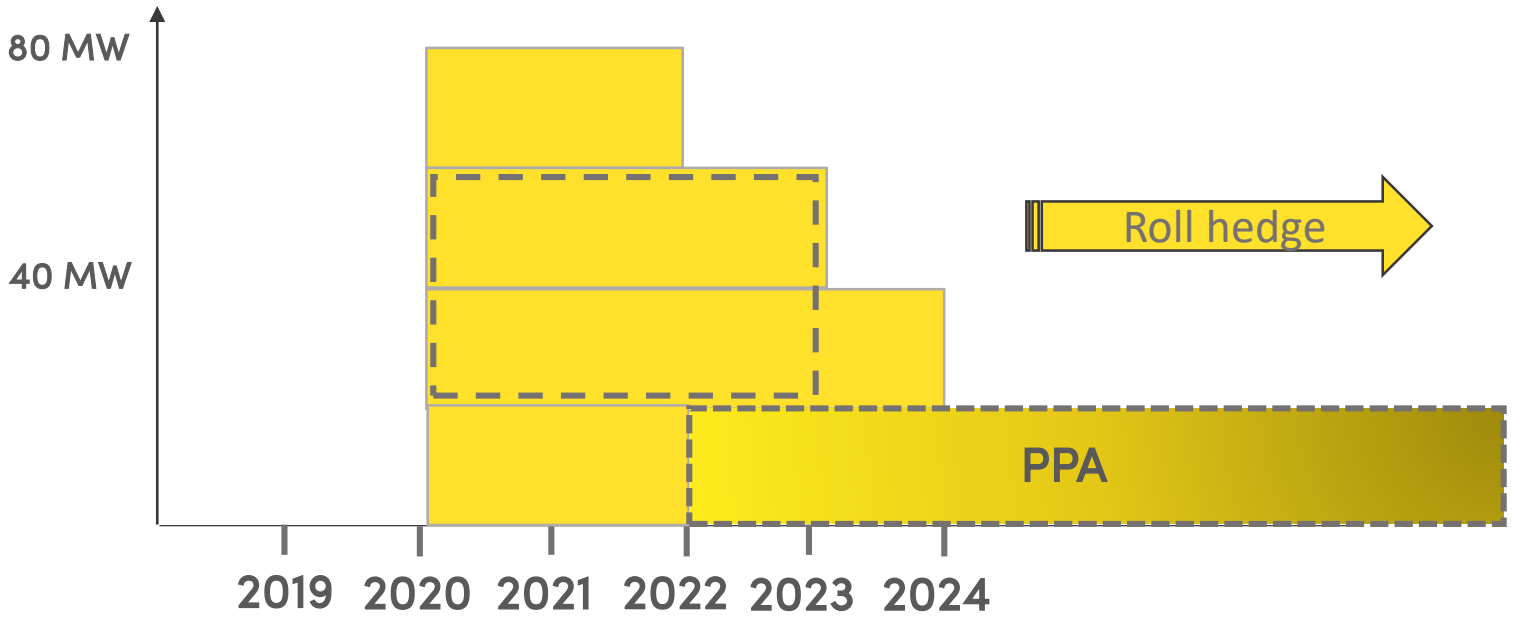


Production: P50 = 326 GWh/y (⇔ 37MW),
70% of P50 = 228 GWh/y (⇔ 26 MW),

Roll the hedges to optimize for high price periods but also protect cash flow payments for debt service etc.

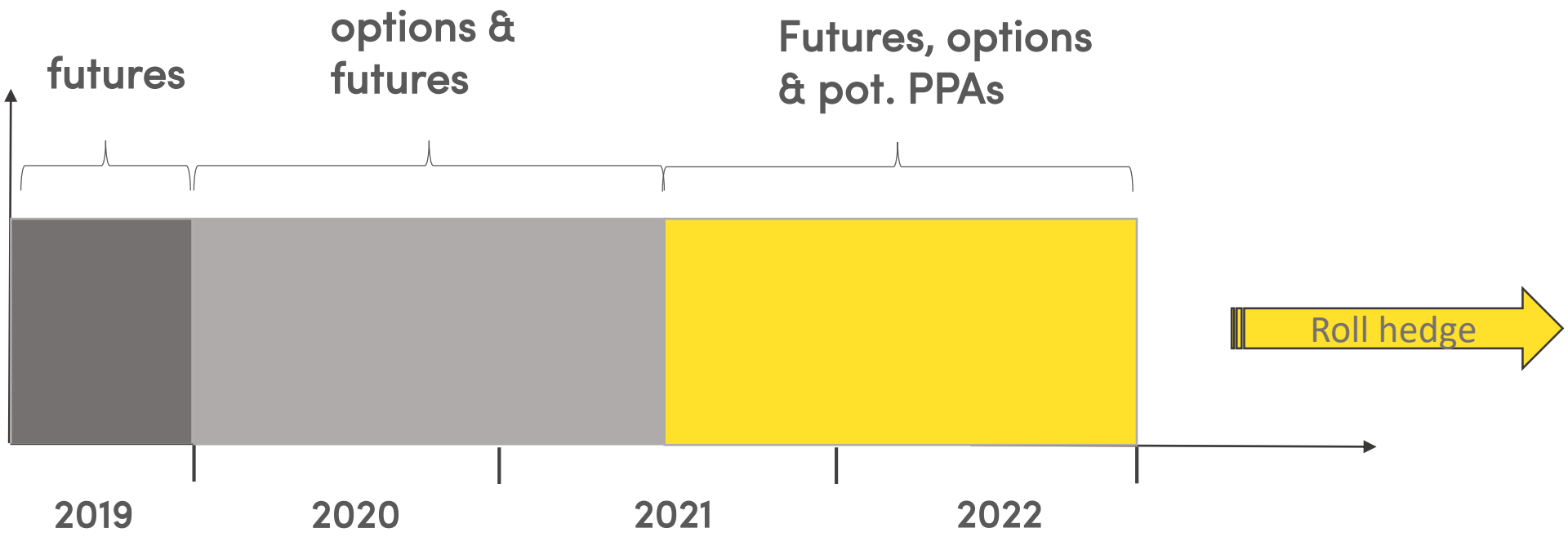


When the market price is right or the opportunity comes … potentially add a PPA

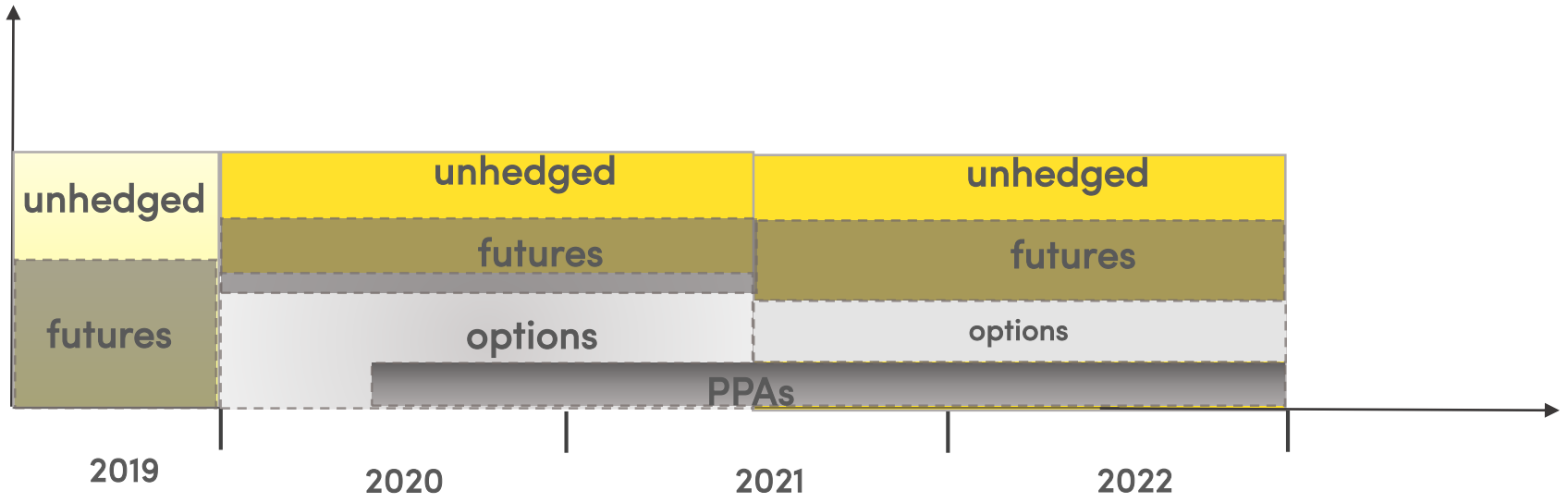


The approach in practice…

HEDGE (financial futures or options contracts on Nasdaq, EEX or bilateral OTC)



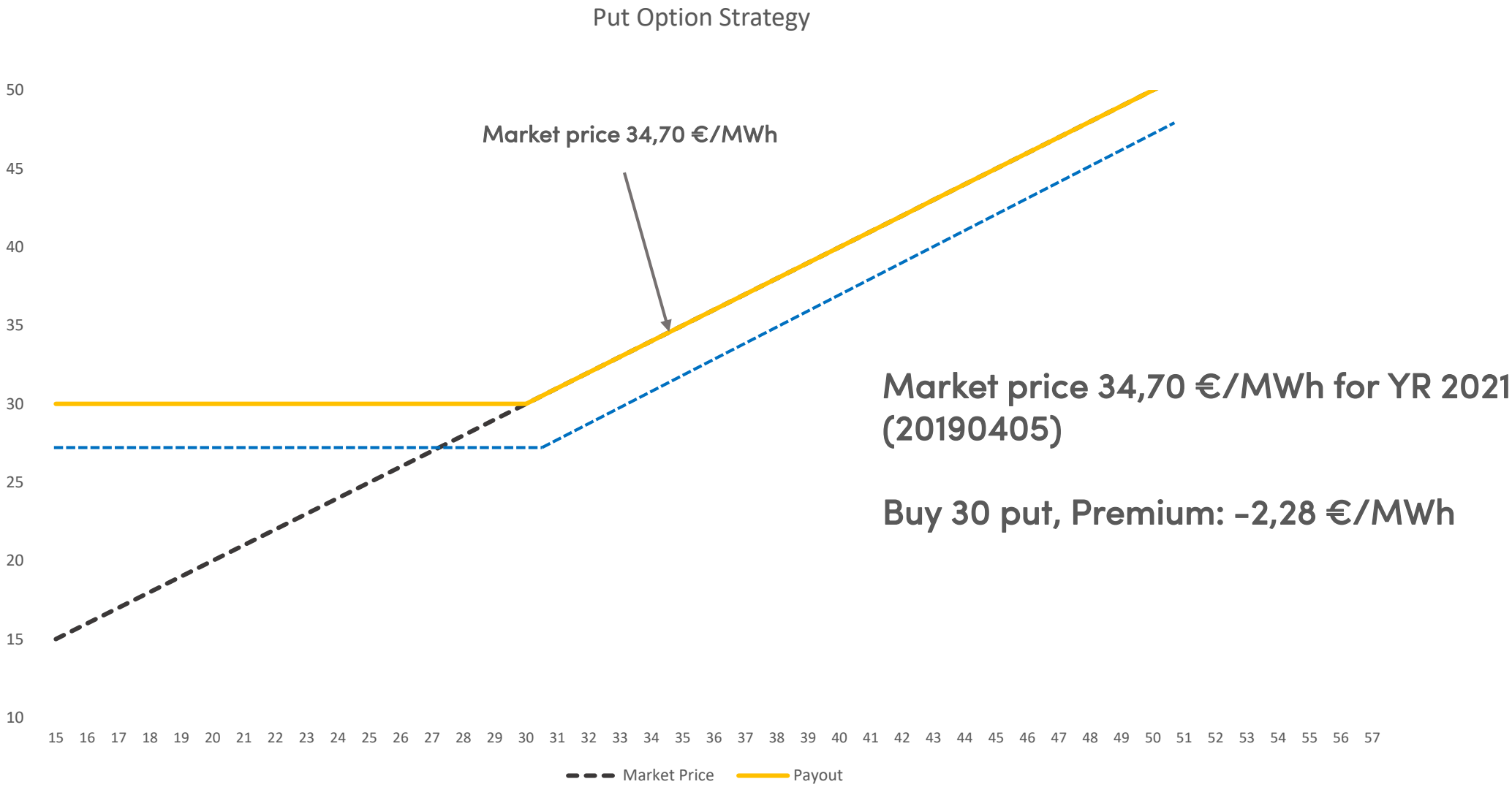
And more in detail...



Optimal risk management tools for the power producer:

OPTIONS!

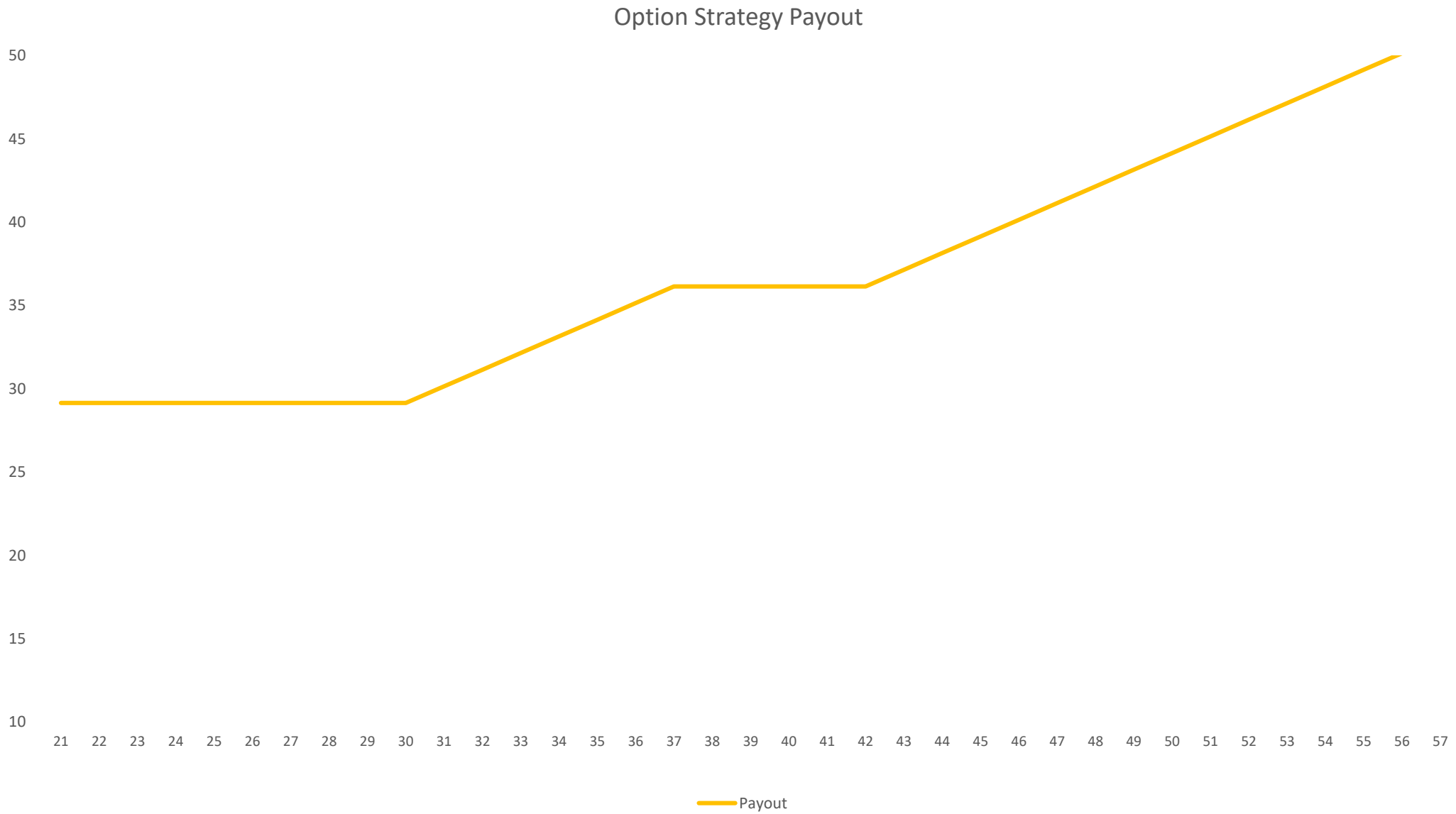
Put option: The right but not the obligation to sell



Market price 34,70 €/MWh for YR 2021 (20190405)

Buy 30 put, Premium: -2,28 €/MWh

With combinations of options you can design your own risk profile!


Option Strategy Payout
50
45
40
35
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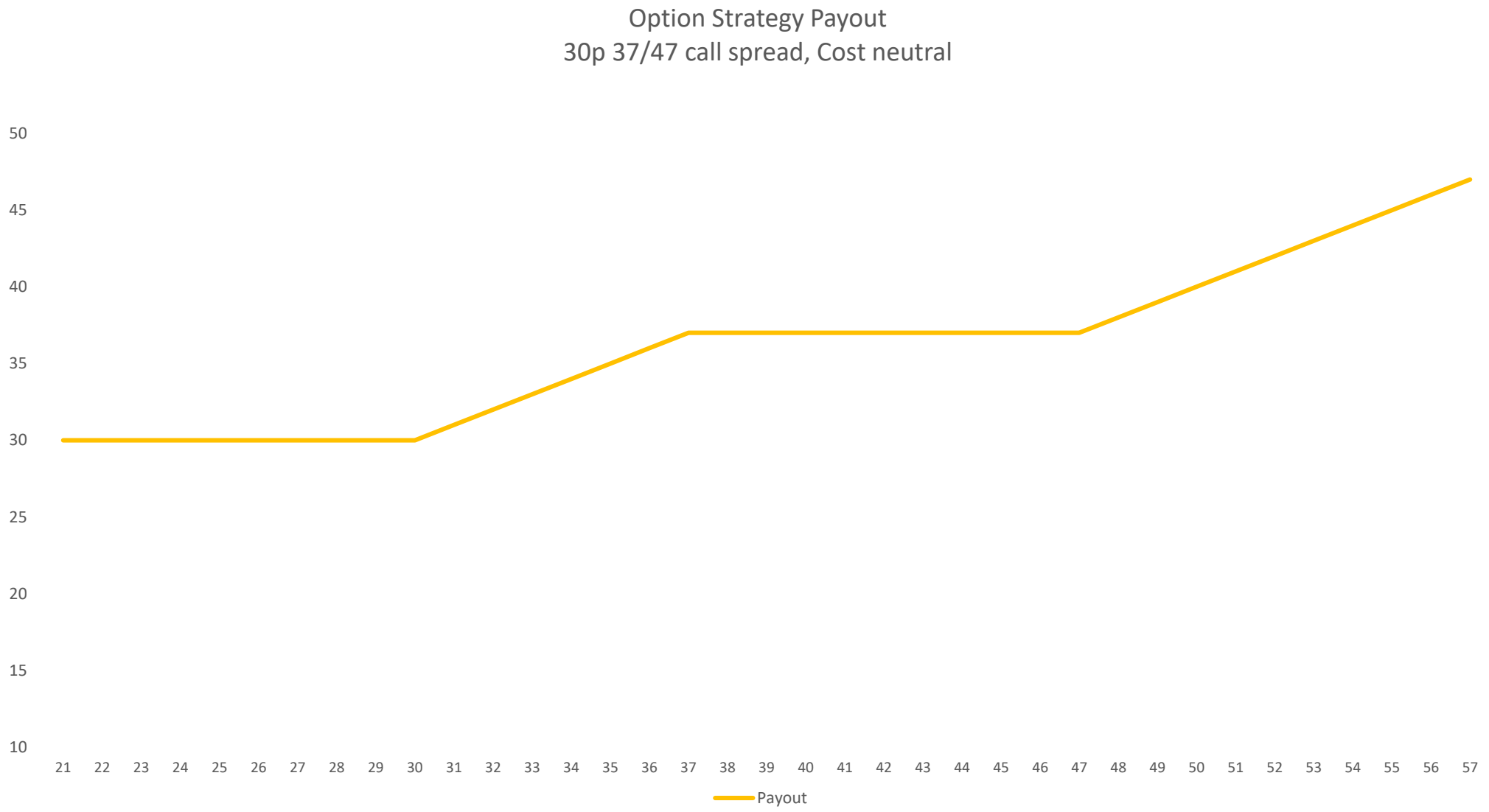
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57
Payout

Market price 34,70 €/MWh for YR 2021 (2019-04-05)

Sell callspread (37/42) and buy put (30) for the premium,

i.e. at a cost of 0,86 €/MWh (for cost neutral 47) =>

Buy	42 call	-2,18 €/MWh	Premium
Sell	37 call	3,61 €/MWh	Premium
Buy	30 put	-2,28 €/MWh	Premium


Option Strategy Payout
30p 37/47 call spread, Cost neutral
50
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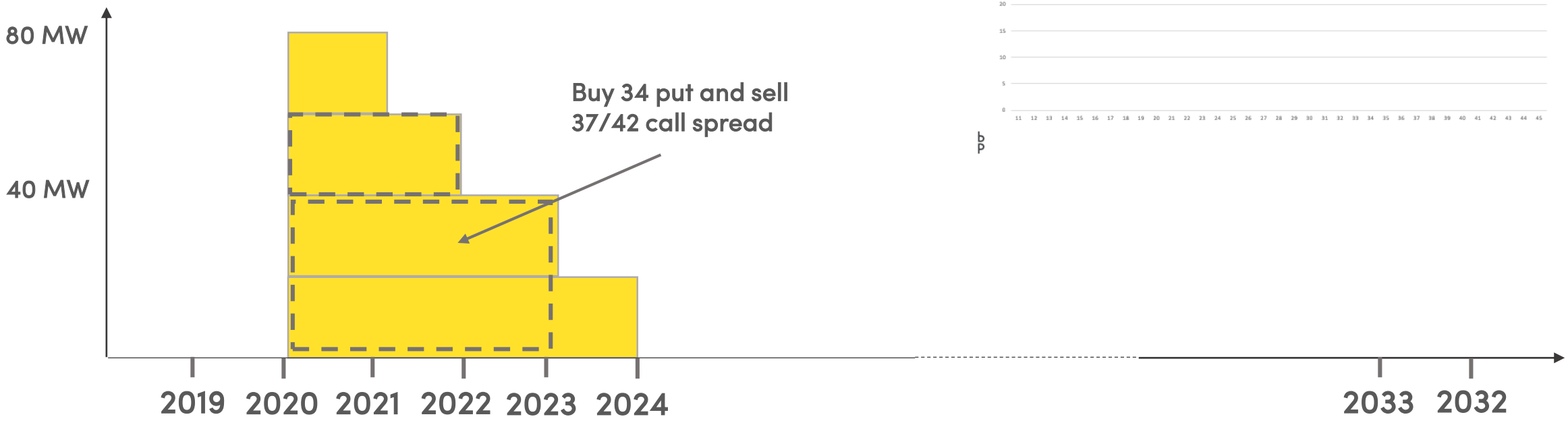
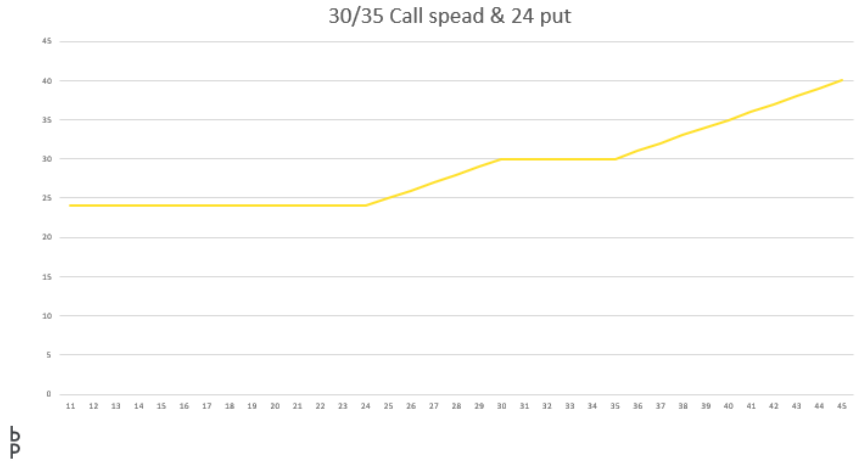
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57
Payout

Add an option structure



Downside protected –
some upside left*



Secured volume in standard
future contracts at fixed price

* Note that it is different levels as in example left" Due to lack of time...

Options are a cheap volume hedge!

Overhedge!

Bodecker Partners