

“From generation gap to generation spread” – how to view investments in a volatile price environment

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- Expectations of future economic performance; and
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Is the good old power price story falling apart?



A crisis is a crisis. And fundamentals are still fundamental.

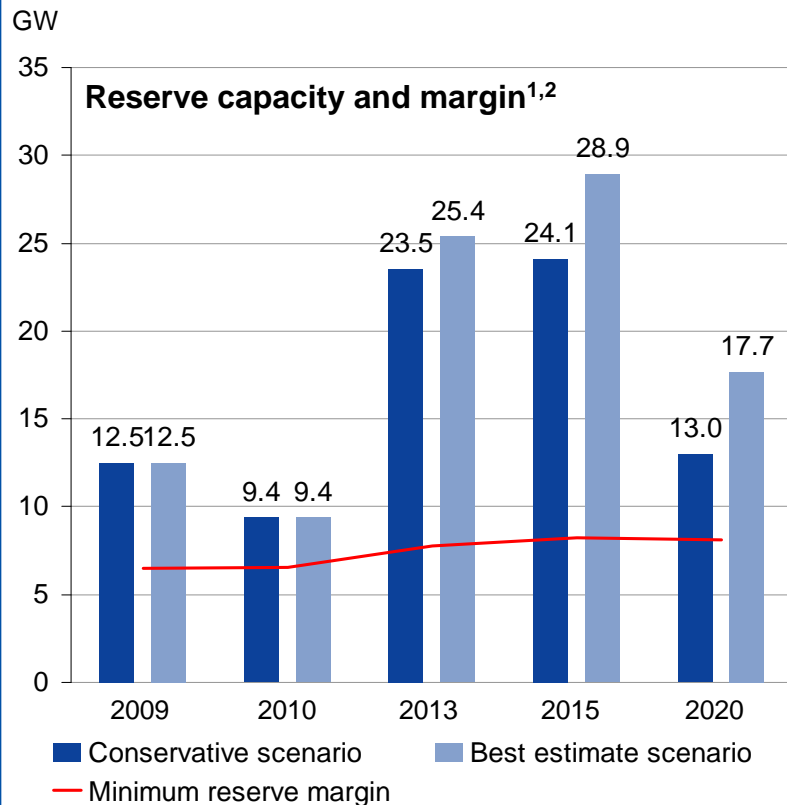
- > Yes, German power prices have not been able to decouple from other commodities' downwards trend.

HOWEVER ...

- > Despite short term decrease in electricity demand we still see tightness in the generation market will occur soon after economic pick-up. Cancellations and delays of new build projects add to this.
- > Current clean dark spreads are still above last year's levels.
- > Long term marginal costs indicate sustainably high power price levels.
- > A well-balanced portfolio of generation assets provides protection against volatile commodity prices.

There is the UCTE view...

Why UCTE expects German reserve margin to remain adequate...



¹ Source: UCTE, January 2009. Basis: 3rd Wednesday January 11:00am

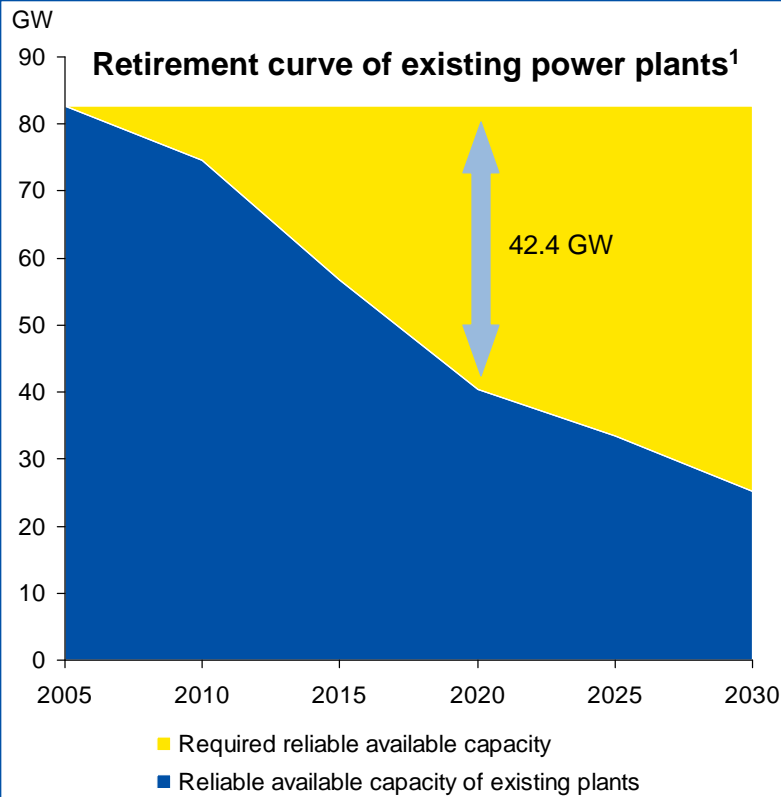
² Incl. nuclear phase-out; based on 0.3% average consumption growth

...and why we don't buy the optimistic assumptions

- > Analysis based on announced power plant projects: net addition of 20 – 22 GW fossil fuel-fired capacity by 2013
 - Over-estimates new build capacity by approx. 10 GW
 - Does not yet take into account impact of financial crisis on investments
- > Contribution of wind capacity to network stability
 - Estimates addition of 20 GW by 2020 (approx. 10 GW more than German government estimates)
 - 10 GW of wind accounted for as reliable available capacity (23% of total wind capacity)

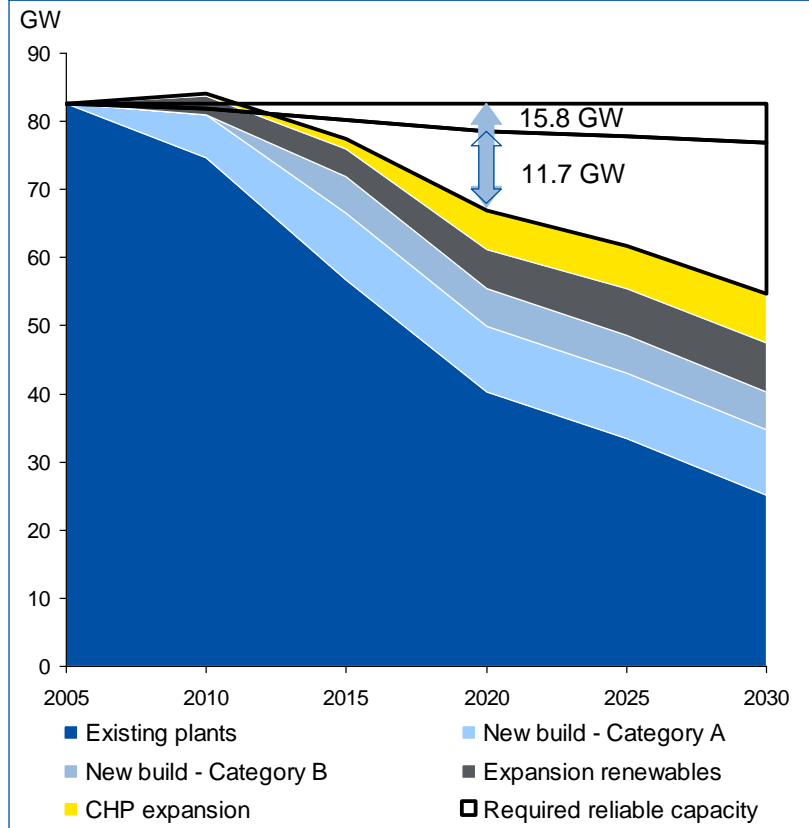
...and the view of German Energy Agency DENA

A significant need for replacement in Germany in the next 10 years...



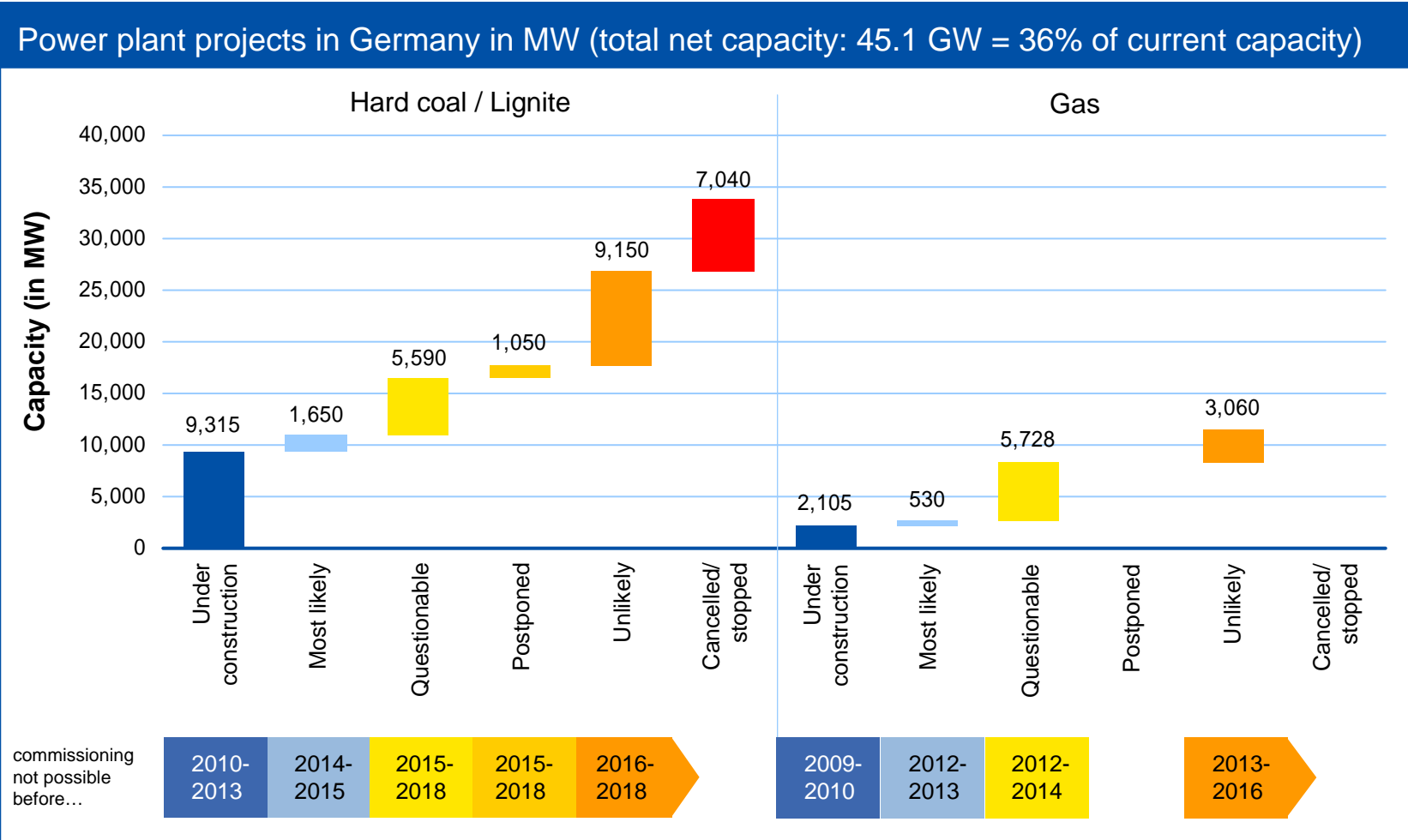
¹ Source: DENA, April 2008. Basis: nuclear phase-out, flat consumption, assumes useful life of 40 and 45 years for CCGTs and coal-fired plants respectively

...and how much is replaced with reliable capacity²



² Source: DENA, April 2008. Basis: nuclear phase-out, full achievement of government targets in renewable energy and CHP, flat consumption (15.8 GW) or reduction in consumption by 0.5% p.a. (11.7 GW)

And the RWE view from daily business: up to 70% of current power plant projects will probably not be realized



Source: RWE, March 2009

New-build projects – literally “Gone with the wind”

Two main reasons for calling off new-build projects:

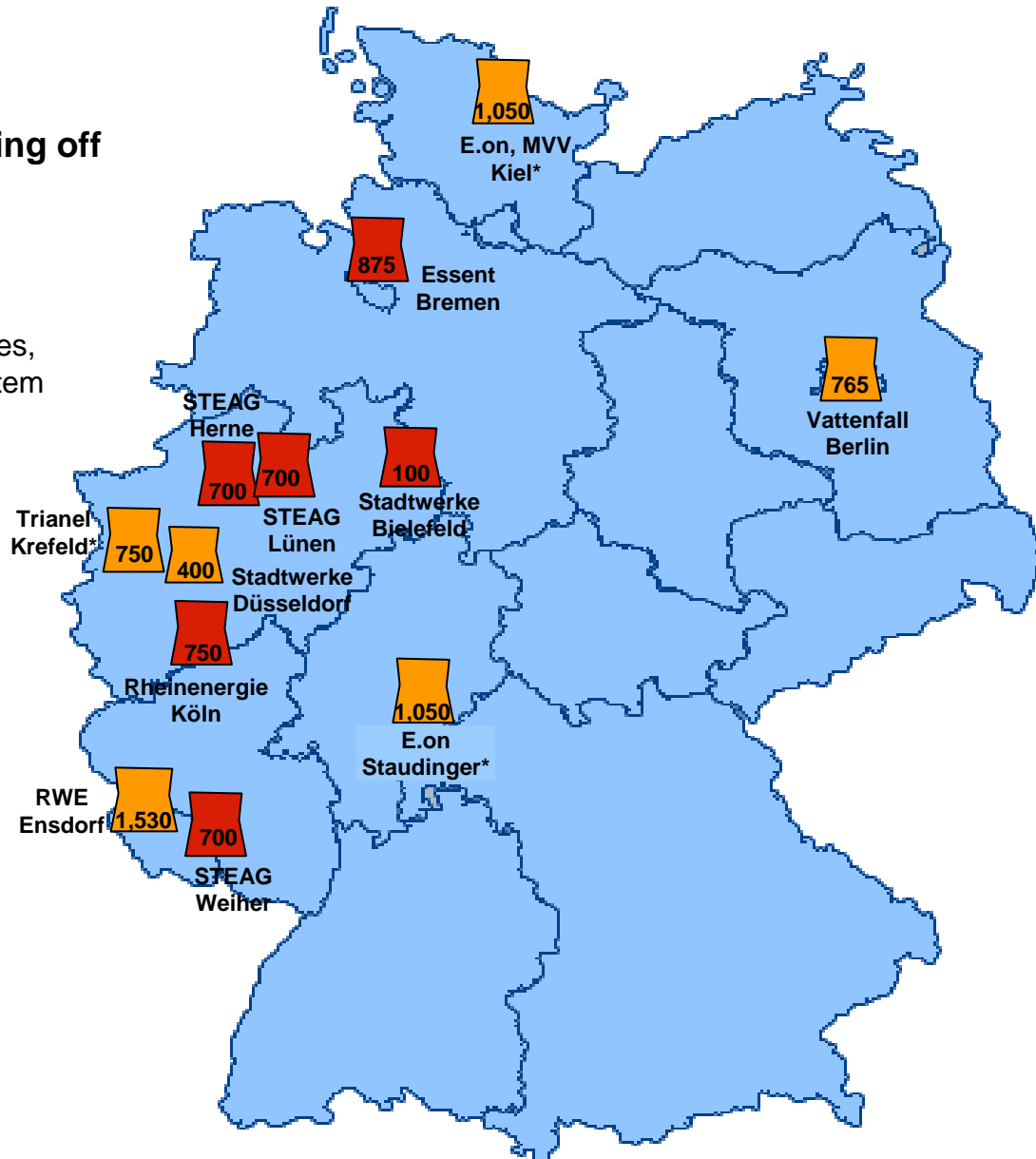


Economic feasibility

increased component prices,
EU-Emission Trading System



Public resistance



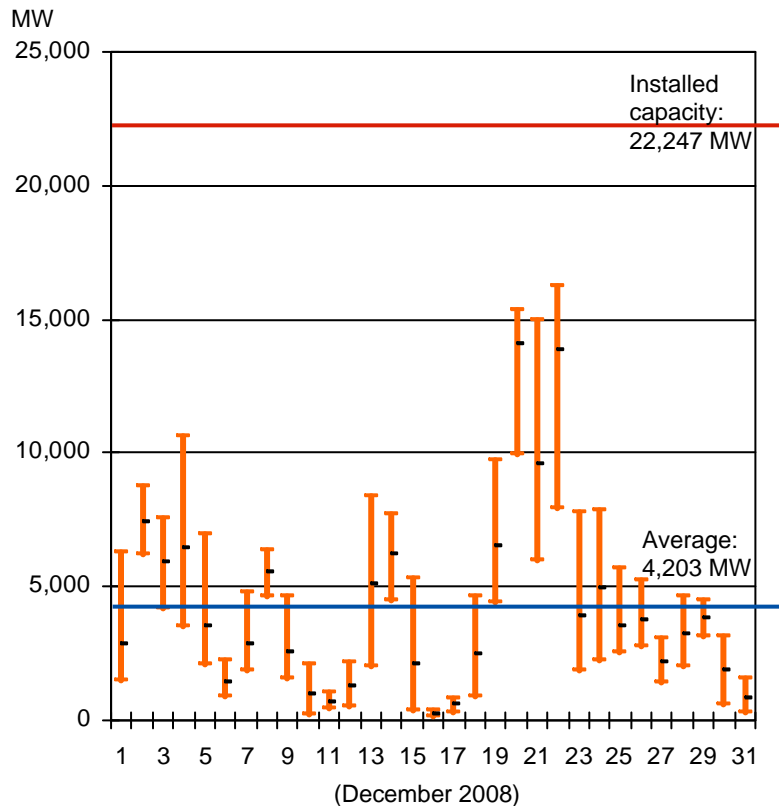
* not yet officially called off, but postponed

Source: RWE survey 2009

Closing the gap?

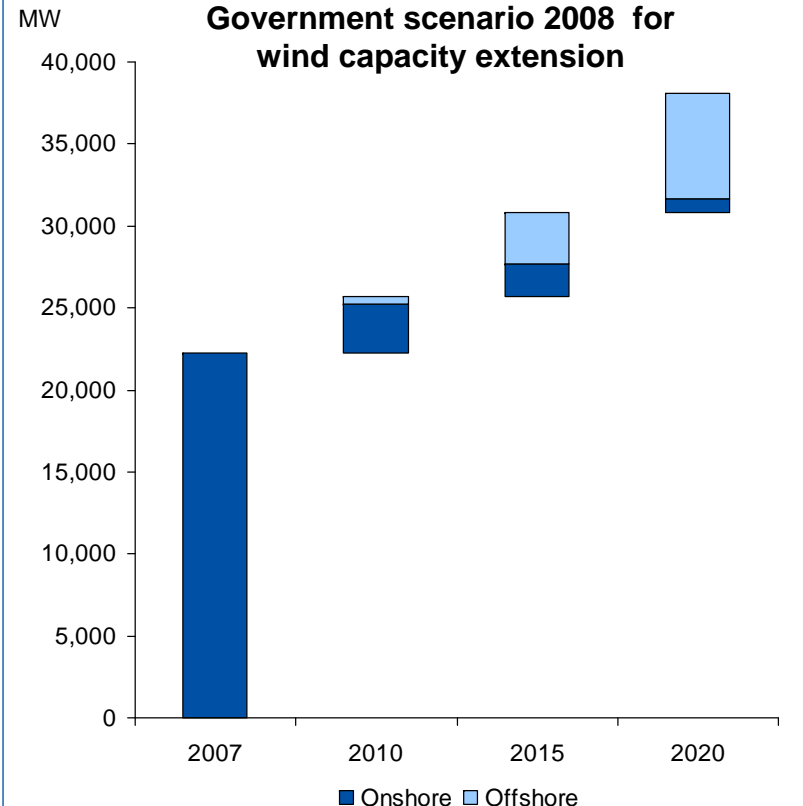
Wind adds Megawatts – and volatility

High volatility of load profile of wind capacity in Germany



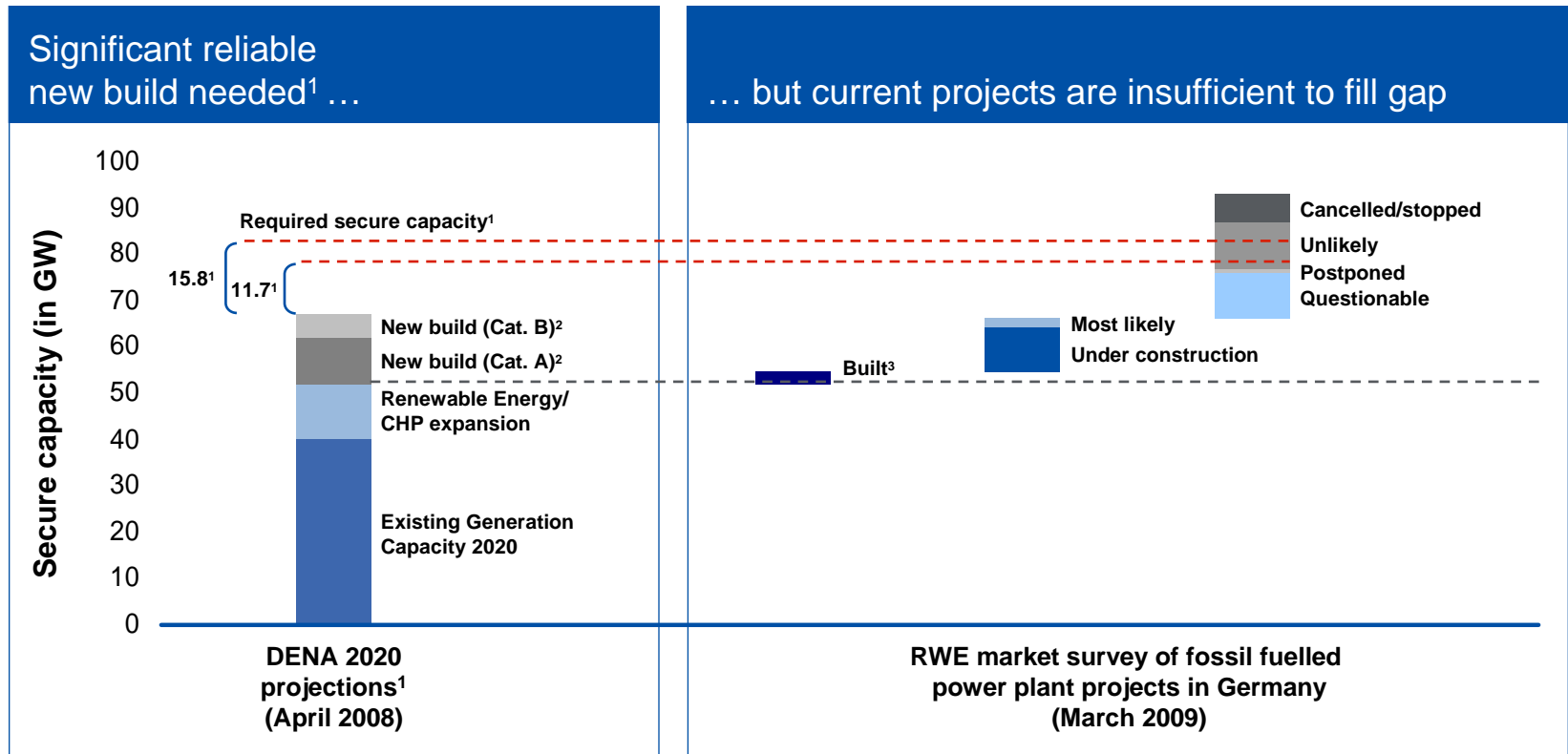
Source: BDEW

Extensive addition to wind capacity until 2020 will increase volatility



Source: German Federal Environment Ministry

So will current investments fill the capacity gap? We don't think so.



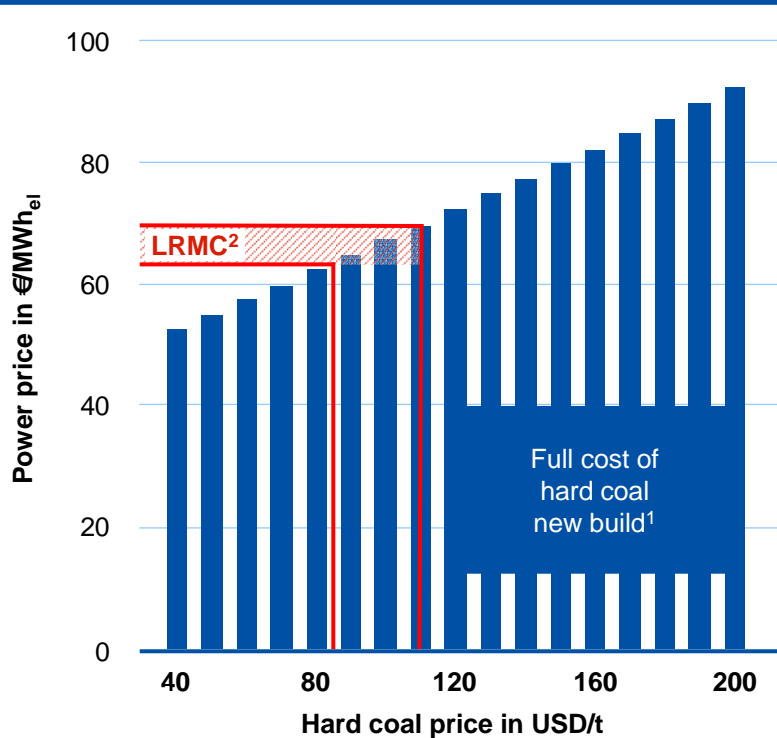
¹ Source: DENA, April 2008. Basis: nuclear phase-out, full achievement of government targets in renewable energy and CHP, flat consumption (15.8 GW) or reduction in consumption by 0.5% p.a. (11.7 GW)

² Category A: projects under construction or operating after 2005, Category B: projects with high probability of execution

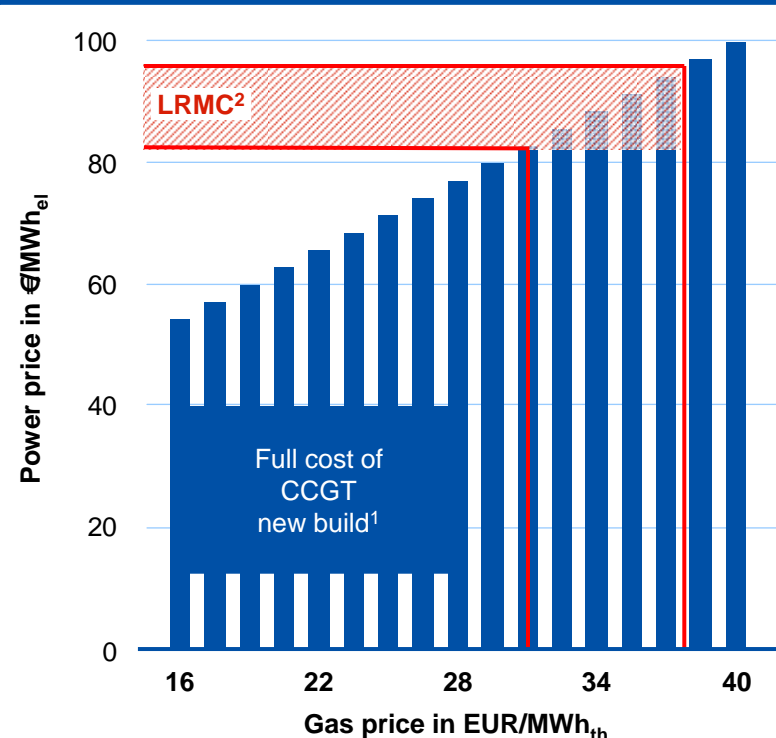
³ Power plant projects already operating since 2005 included in DENA new build category A plus additional projects completed in the meantime (2.8 GW secured capacity)

That's why long run marginal costs can serve as an indication for higher power prices

Required German base load price at full cost of hard coal new build¹



Required German base load price at full cost of CCGT new build¹

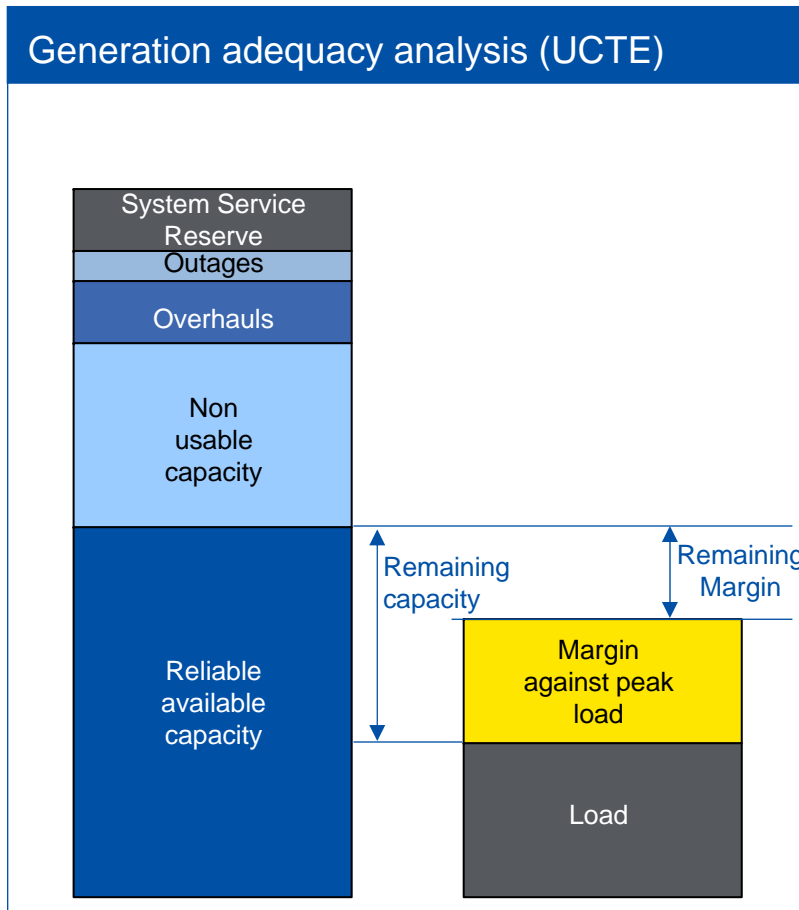


¹ Illustrative example calculated on basis of 7,000 full load hours (hard coal and CCGT) as well as CO₂ emission certificate price of 20 €/t at 100% auctioning and a EUR/USD exchange rate of 1.25.

² Source for 'LRMC' fuel costs: International Energy Agency, World Energy Outlook 2008; Ranges are based on 'Reference' and 'Climate Policy' scenarios with a time horizon of 2020 – 2030 in real-term 2007 prices.

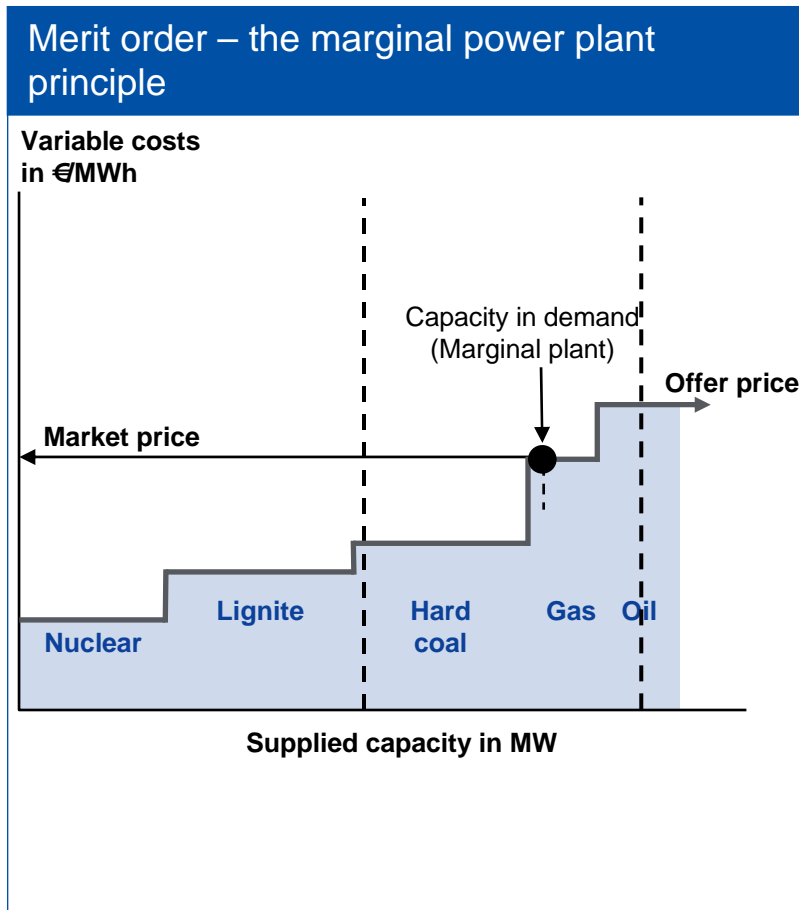
From the
“generation gap”
to the
“generation spread”

Why UCTE and DENA are not a good prediction of future spreads developments



- > Analyses only consider technical availability and adequacy of the generation system
 - cost structure of existing power plants does not form part of and impact outcome of study
- > Studies only look at selected peak times, but ignore extreme scenarios (e.g., weather conditions, unforeseeable outages, volatility of wind generation, gas shortages)
- > Does not allow dynamic review of changing commodity prices and regulatory environment (e.g., change of CO₂ allocation, realisation of offshore wind farms) and their impact on generation portfolio

Merit order provides better tool to look at dynamics of a power plant portfolio



- > Due to low elasticity of demand, prices in electricity markets are driven by the merit order structure
- > Margins depend primarily on the cost efficiency of the available supply, not on adequacy (marginal plant mechanism)
- > Due to the significant time requirement for planning, permitting and construction of new generation capacity, merit order forecasts are valid for several years
- > Today, proactive investment strategies to avoid cost inefficiencies cannot be realised by the market due to the combination of significant sunk cost and insecurity of the future market regime

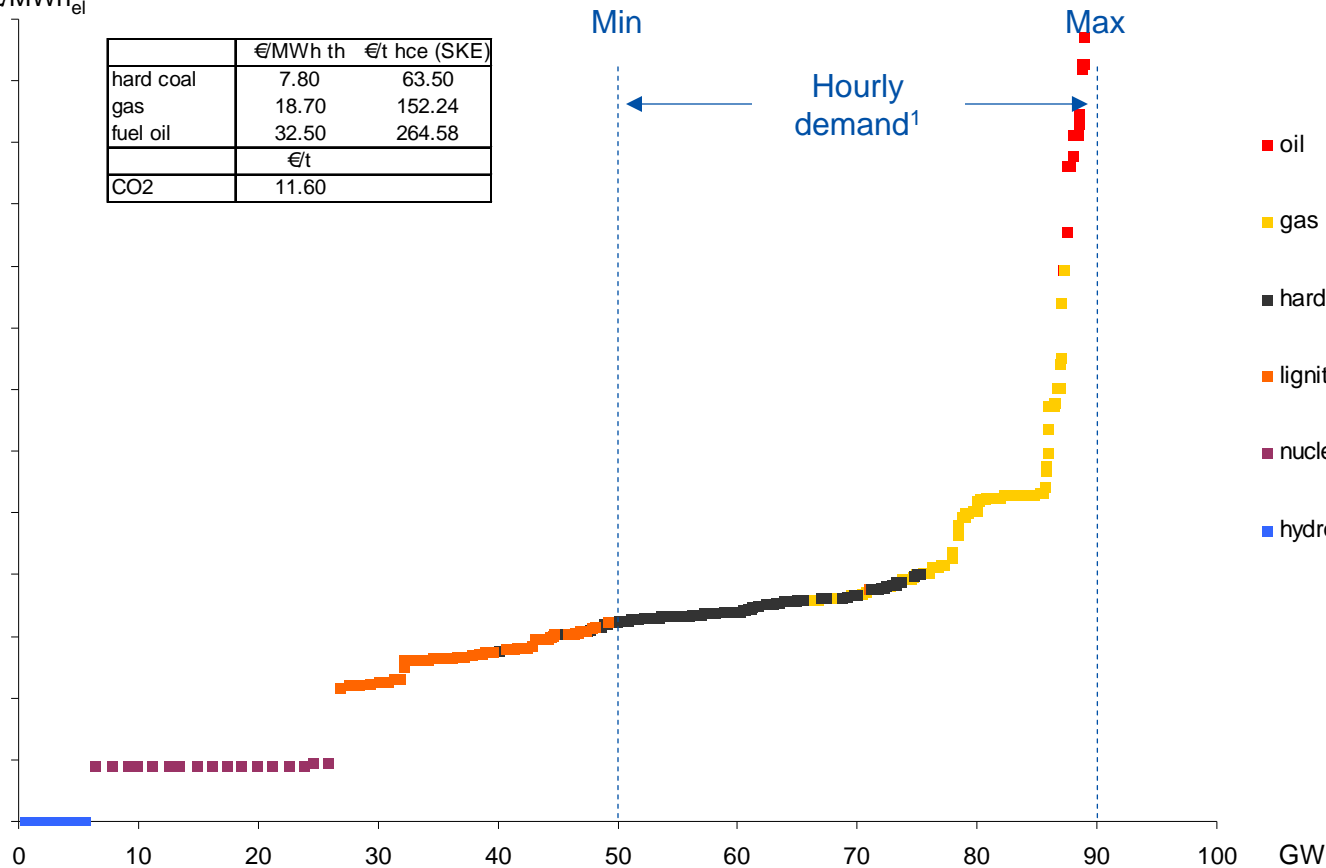
Note: Must-run capacity is negative demand and does not take part in price formation; it is partially compensated by import demand

How to earn a margin in a low commodity price environment

Merit order (wholesale) for delivery in March 2009

Variable costs
in €/MWh_{el}

| | €/MWh th | €/t hce (SKE) |
|-----------|----------|---------------|
| hard coal | 7.80 | 63.50 |
| gas | 18.70 | 152.24 |
| fuel oil | 32.50 | 264.58 |
| | €/t | |
| CO2 | 11.60 | |



> Like in the “old days” - today’s low CO₂ prices result in a fuel sorted merit order

> Current CO₂ prices lead to low variable costs of base load lignite and hard coal plants

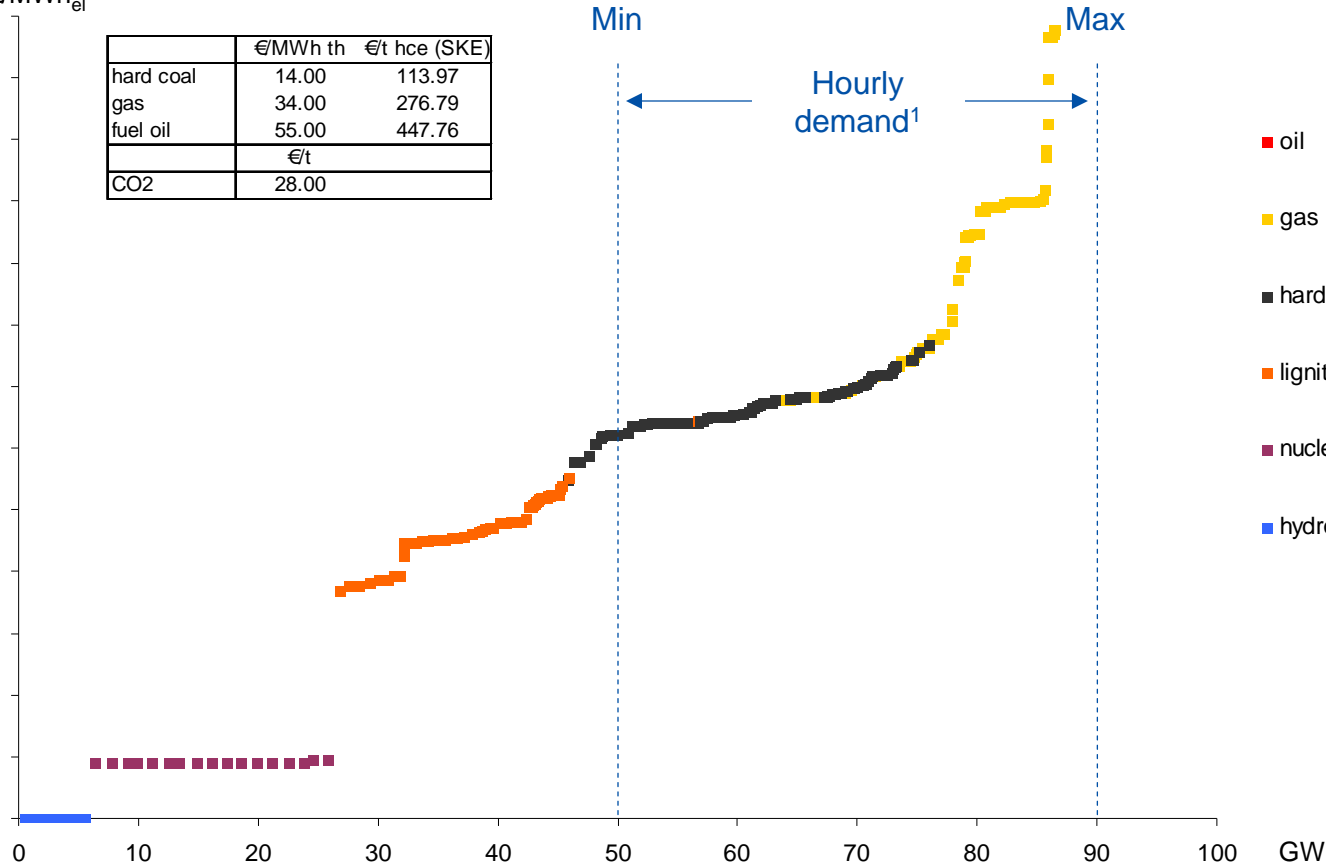
> Despite low power prices still attractive spreads for the entire portfolio are generated

¹ Based on wholesale market including import demand

“The summer of 2008” – how to earn a margin in a high commodity price environment

Variable costs
in €/MWh_{el}

| | €/MWh th | €/t hce (SKE) |
|-----------|----------|---------------|
| hard coal | 14.00 | 113.97 |
| gas | 34.00 | 276.79 |
| fuel oil | 55.00 | 447.76 |
| | €/t | |
| CO2 | 28.00 | |



> The time lag for gas prices in an increasing commodity price environment led to reduced peak spreads

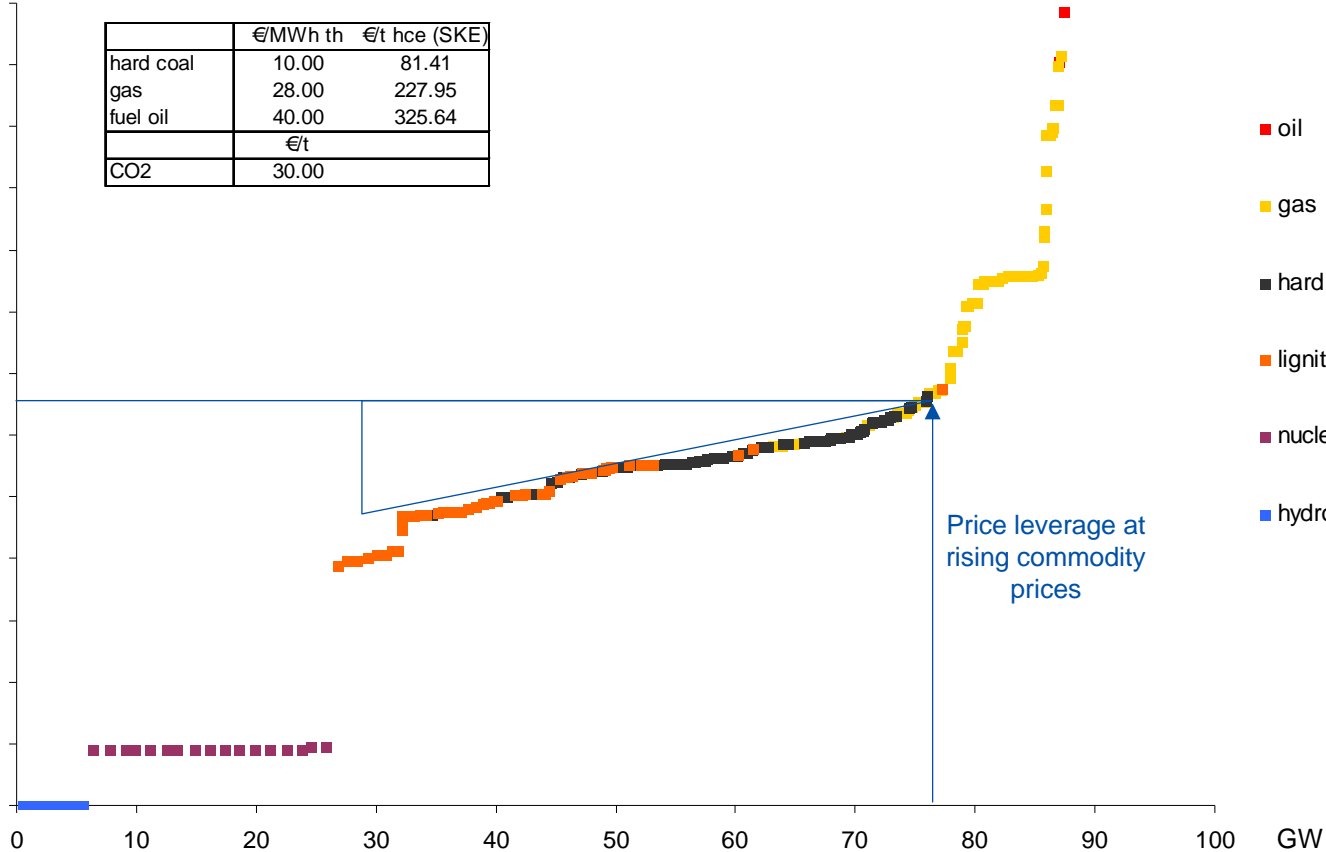
> Lower peak spreads were compensated by higher base load spreads

¹ Based on wholesale market including import demand

A balanced portfolio of generation assets provides stability in a volatile commodity price environment

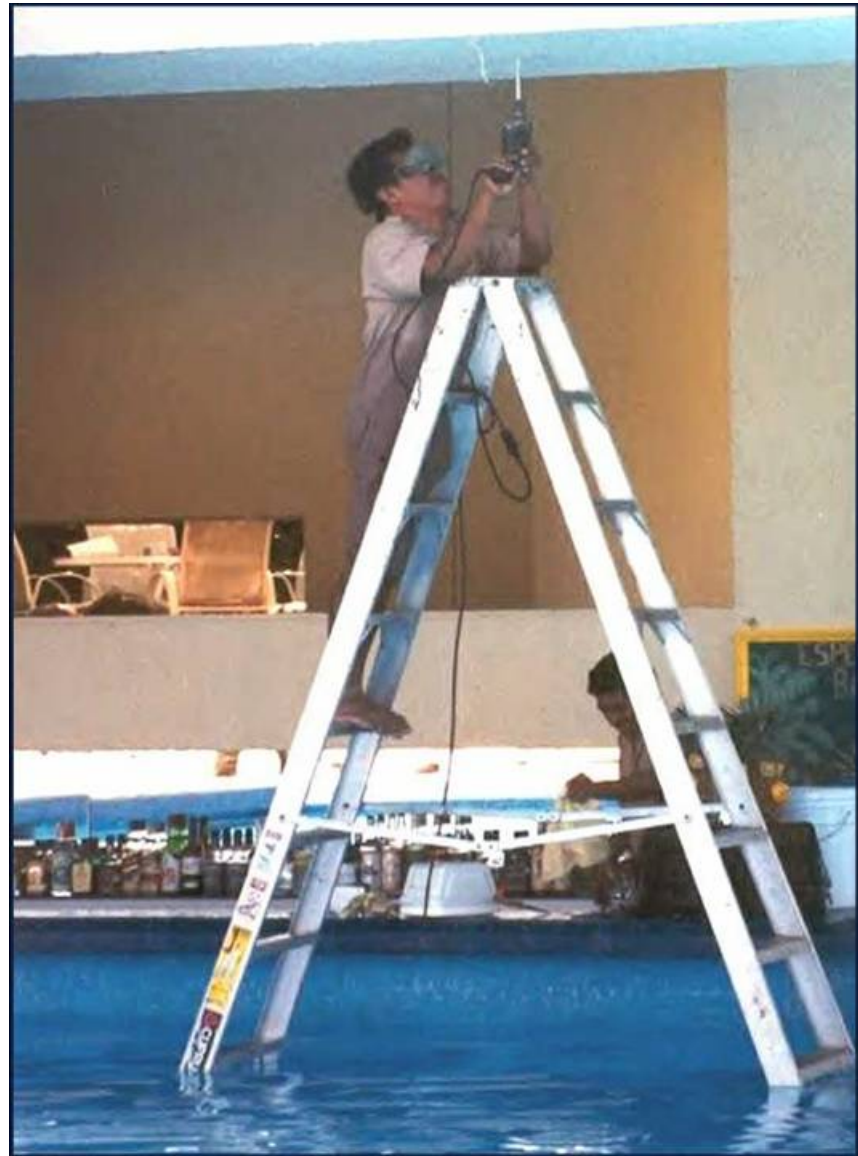
Variable costs
in €/MWh_{el}

| | €/MWh th | €/t hce (SKE) |
|-----------|----------|---------------|
| hard coal | 10.00 | 81.41 |
| gas | 28.00 | 227.95 |
| fuel oil | 40.00 | 325.64 |
| | €/t | |
| CO2 | 30.00 | |



- > Spreads remain in relatively narrow ranges
- > Less efficient lignite plants (in this example carbon at €30/t!) compensated by increased margin of nuclear plants

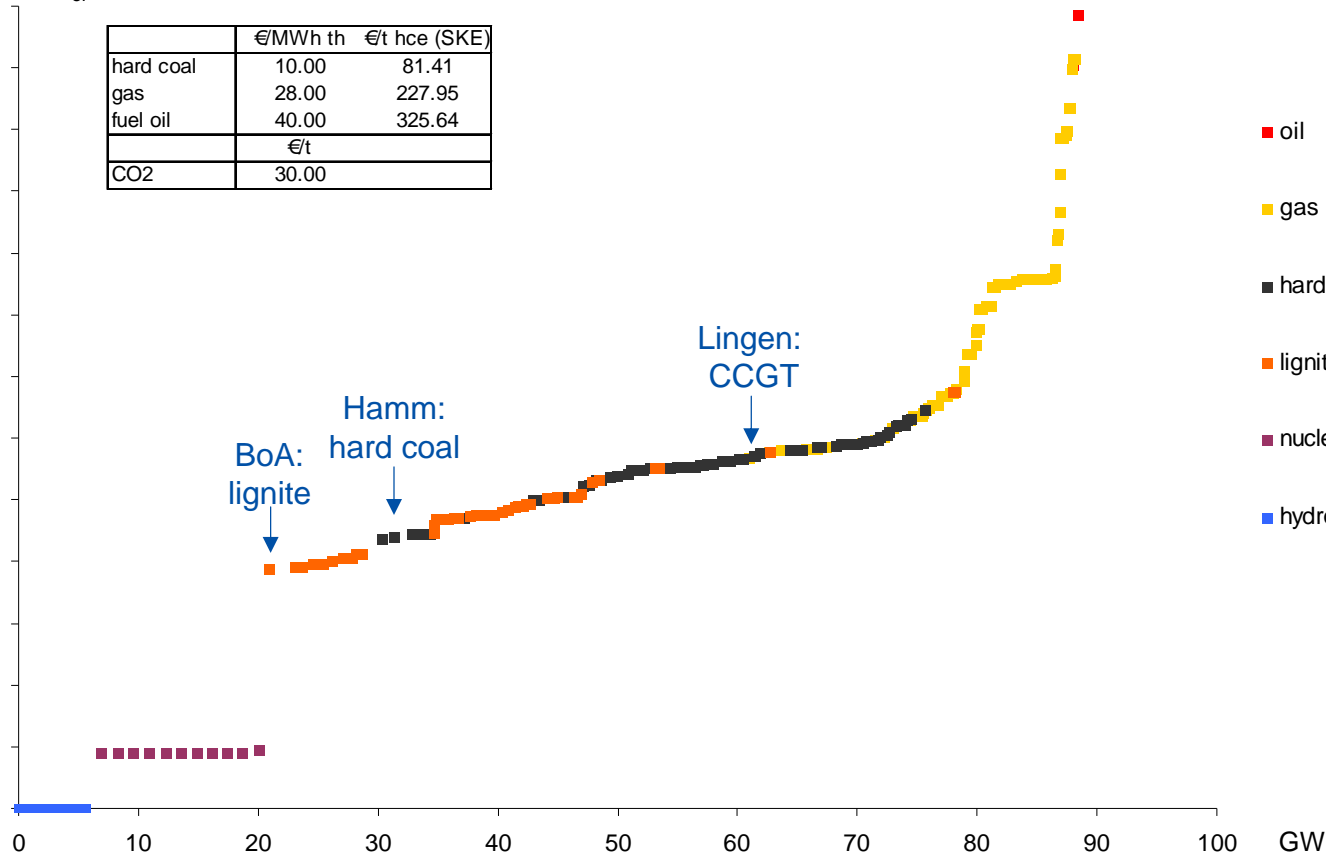
In such an environment –
what can we build in
a reasonable way?



Our strategy: Be the most efficient plant within the respective fuel type ...

Variable costs
in €/MWh_{el}

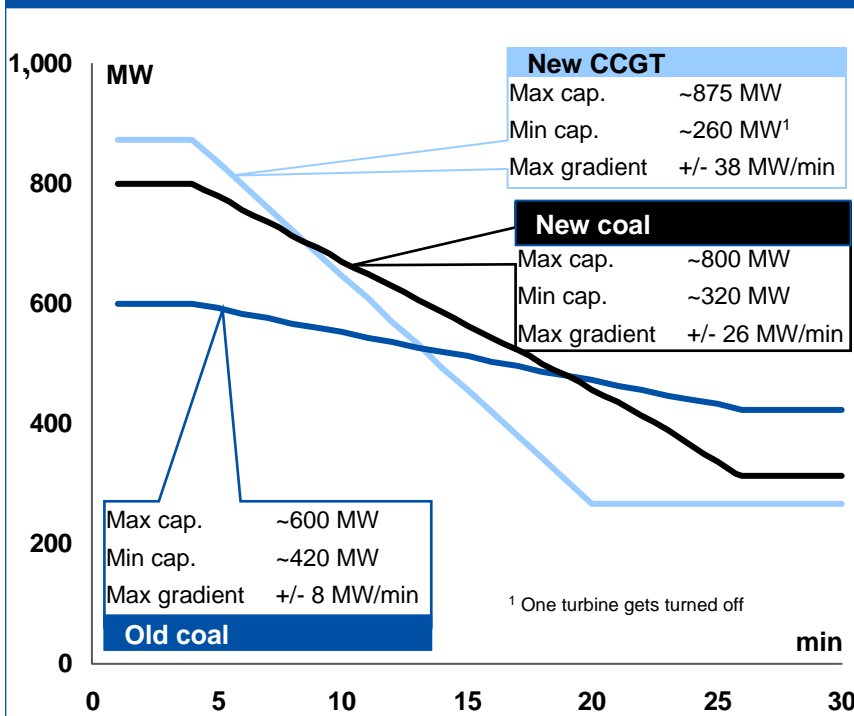
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|-----------|----------|---------------|
| hard coal | 10.00 | 81.41 |
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| fuel oil | 40.00 | 325.64 |
| | €/t | |
| CO2 | 30.00 | |



- oil
 - gas
 - hard coal
 - lignite
 - nuclear
 - hydro
- > Replace “worn out” lignite and hard coal fired plants
- > Plants to the right hand side will therefore remain as peak-load power plants in the curve

... and be flexible (because flexibility will fetch increasing premia)

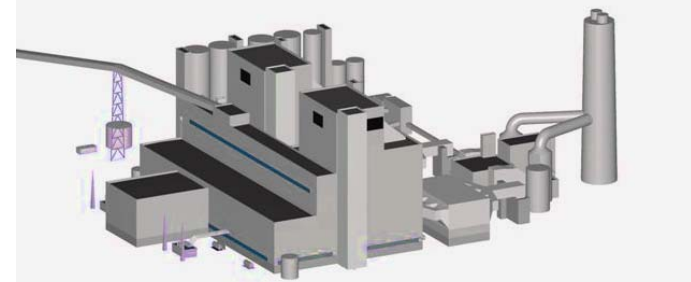
Comparison of ramp capacities (new CCGT unit and old coal unit)



Lingen: 875 MW highly flexible CCGT plant for all load regimes



Eemshaven: coal fired 1,600 MW plant – 2 flexible 800 MW units for mid merit regime

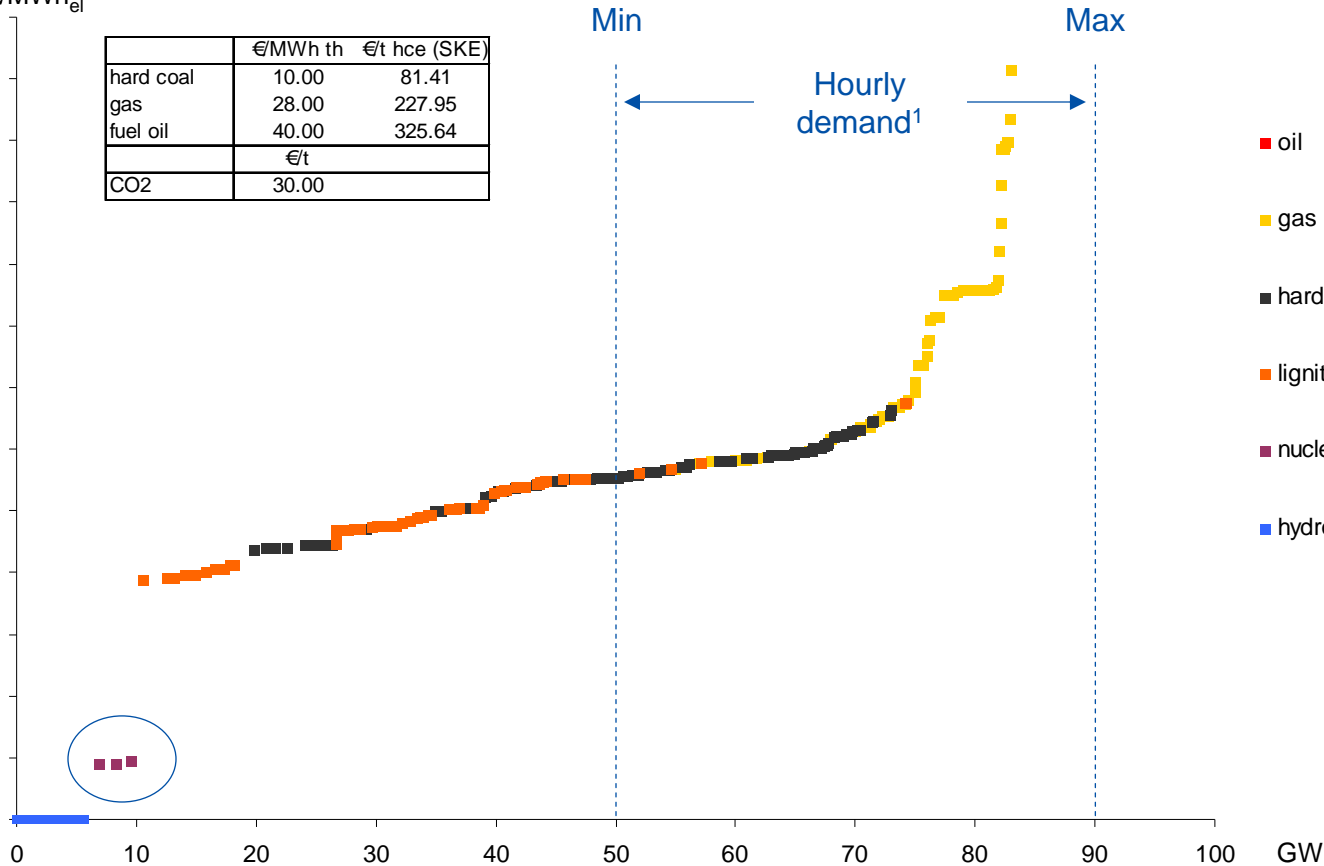


▶ Small and flexible units can be dispatched more quickly to capture extra margin potential along the merit order

How is nuclear capacity going to be replaced by 2020?

Variable costs
in €/MWh_{el}

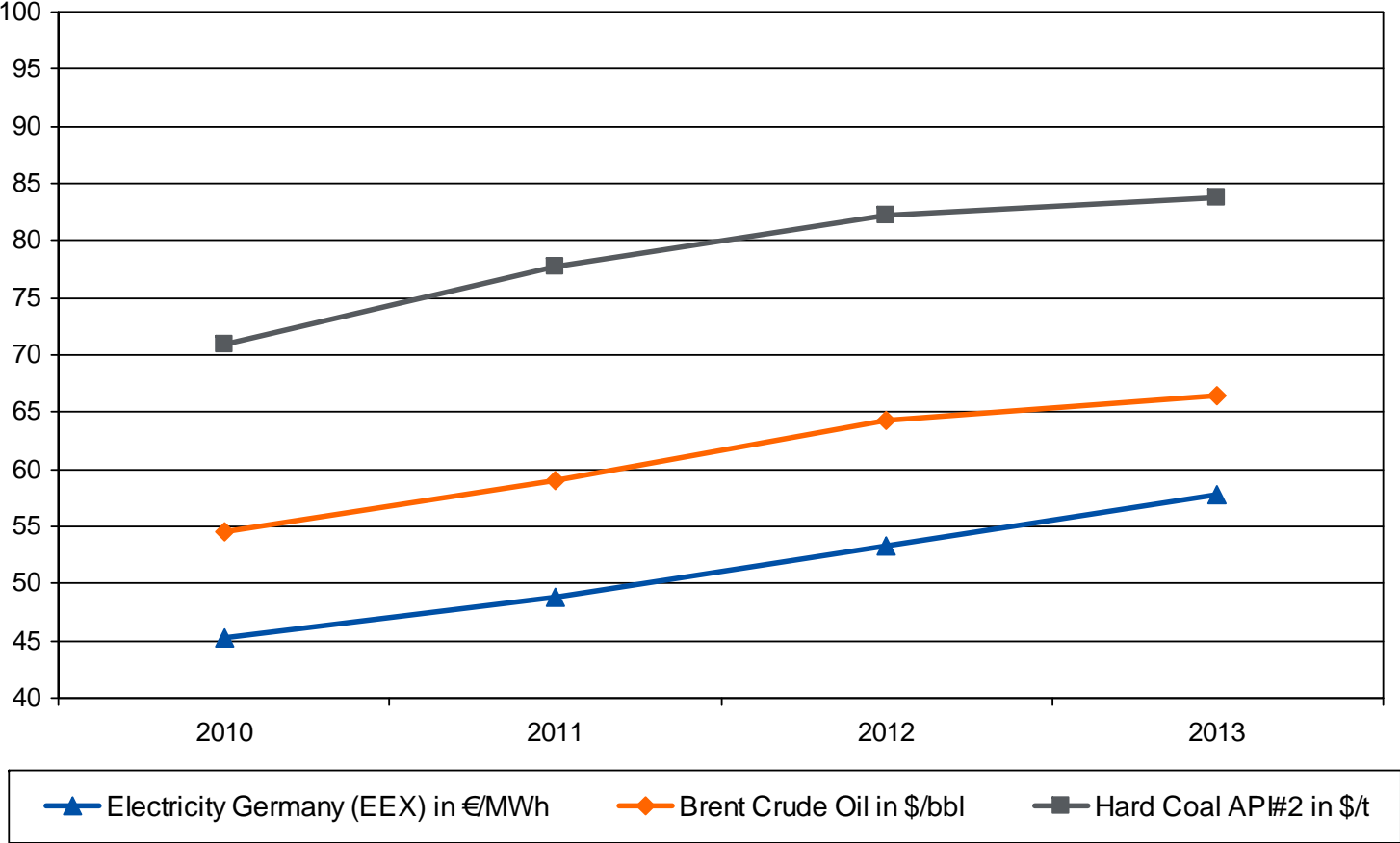
| | €/MWh th | €/t hce (SKE) |
|-----------|----------|---------------|
| hard coal | 10.00 | 81.41 |
| gas | 28.00 | 227.95 |
| fuel oil | 40.00 | 325.64 |
| | €/t | |
| CO2 | 30.00 | |



- > Current investments almost entirely for replacement of old fossil fuel-fired plants
- > Lack of initiated replacement of nuclear plants could increase the risk of supply shortage
- > To avoid those risks, old coal plants would remain in operation and lead to higher CO₂ and power prices

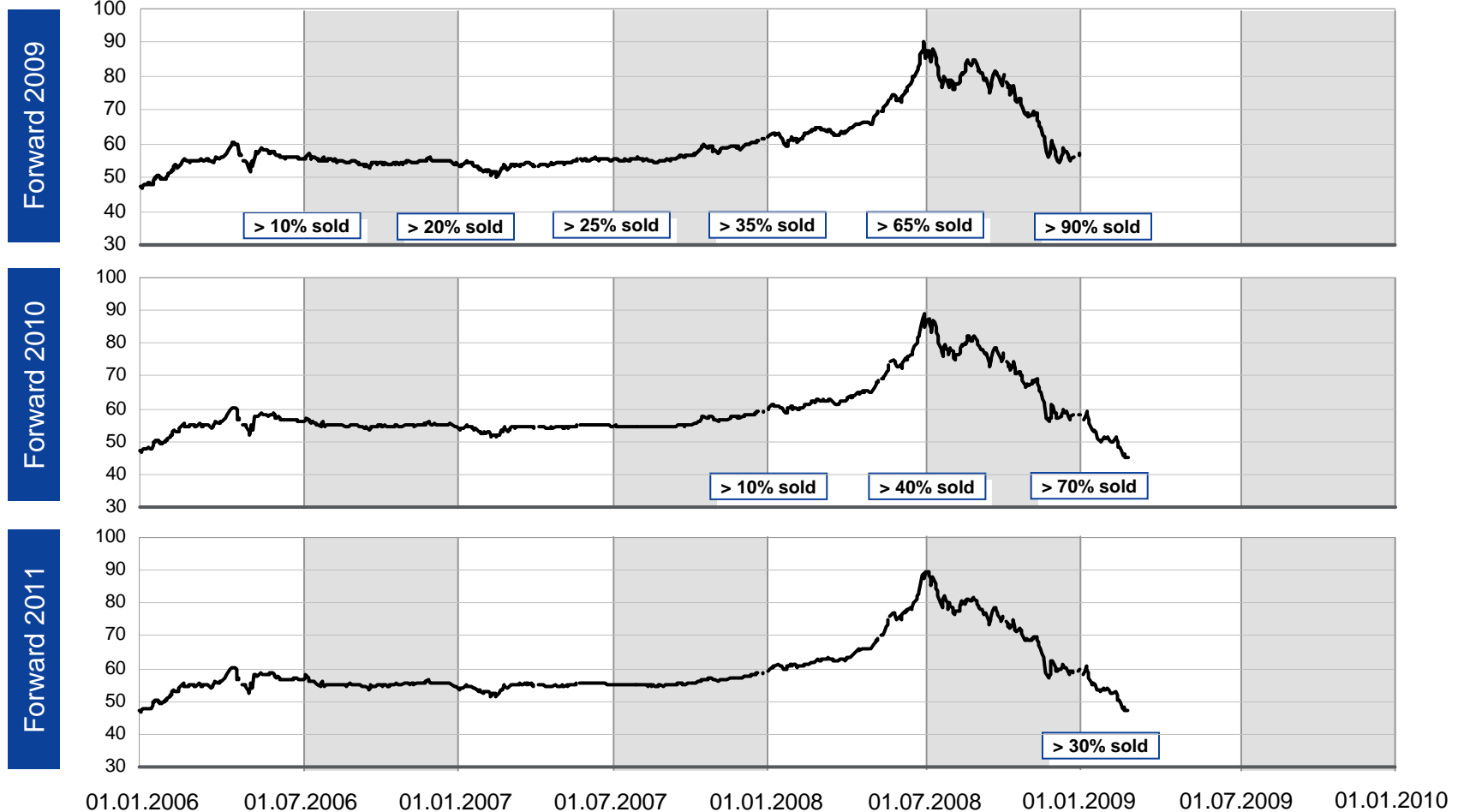
¹ Based on wholesale market including import demand

The steepest contango in ten years: Market seems also to believe in higher power prices in the future



High earnings visibility: We have locked in attractive margins for 2009 and 2010

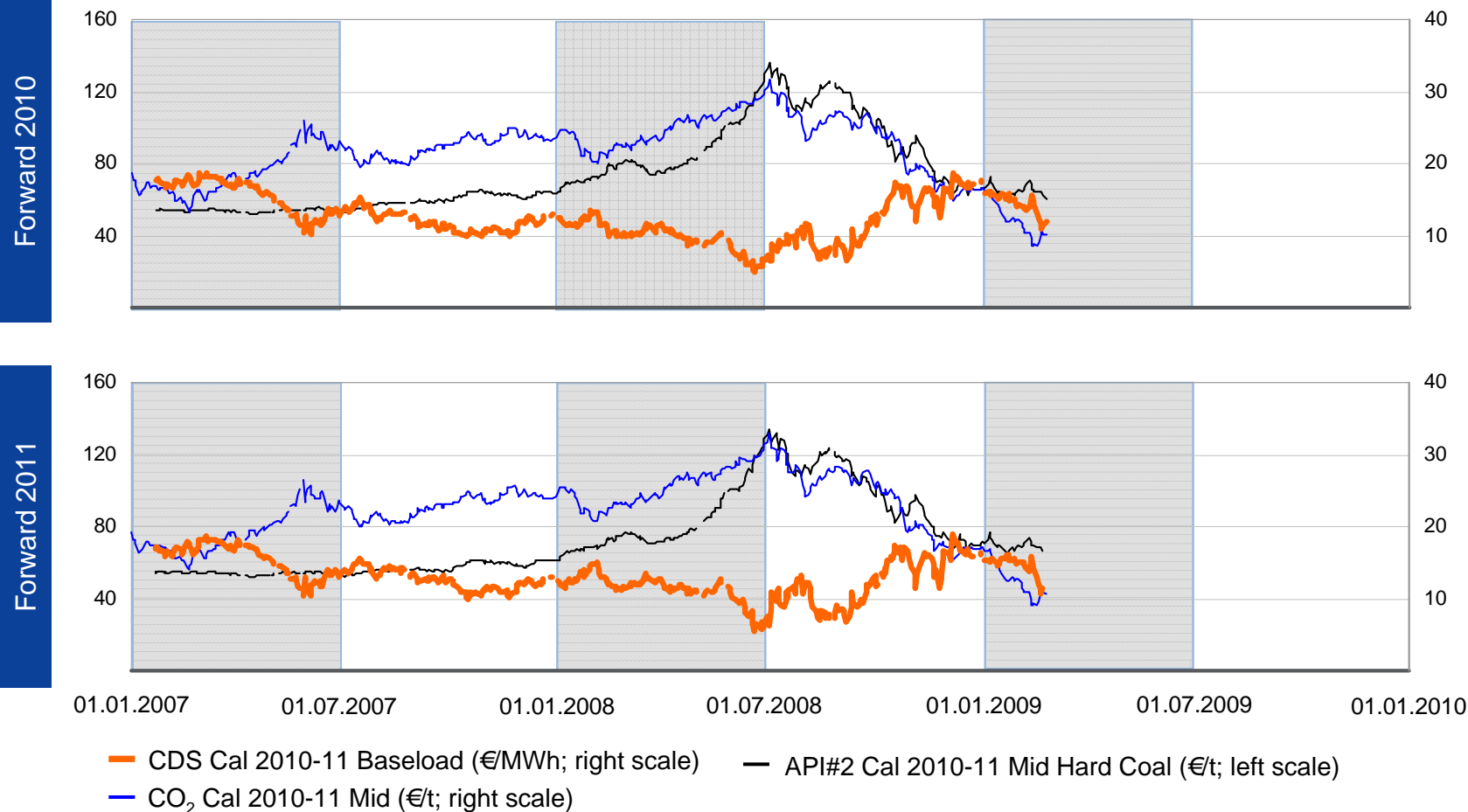
Forward selling of RWE Power in the German market (base load forwards in €/MWh)



(average realised price for forward 2007: €47/MWh, for forward 2008: €58/MWh)

¹ Forward selling as of February 1st 2009; price data as of 23.02.2009

While 2009 is almost fully locked in there is still potential for 2010 due to higher clean dark spreads



Reminder

The latest information can be found at www.rwe.com

> Investor and analyst conference on fiscal year 2008:

<http://www.rwe.com/web/cms/mediablob/en/204836/data/36078/Analyst-and-Investor-Conference-on-fiscal-year-2008.pdf>

> EEI Conference 2008 – RWE presentation:

<http://www.rwe.com/web/cms/mediablob/de/114244/data/2819/download-de-EEI.pdf>

> Prospective impact of economic downturn on electricity demand in Europe:

<http://www.rwe.com/web/cms/mediablob/en/194854/data/34376/thesenpapier.pdf>

> Facts & Figures 2008

<http://www.rwe.com/web/cms/mediablob/en/108808/data/2414/de-Facts-Figures-26-11.pdf>