

Affordability options as a policy response to the energy crisis

—
Tim Schittekatte
schtim@mit.edu

MIT Energy Initiative & MIT Sloan Business School
Florence School of Regulation

CEEM conference

Towards and new electricity market model: is decoupling the right approach?

Paris, December 5, 2022

Diagnosis: calling a cow a cow



- **Observation in the policy debate:** Radical calls to overthrow the regulatory compound gradually built up over the past two decades or more
 - **Diagnosis of current situation:**
 - (Marginal) energy prices have reached never expected high sustained levels
 - Much earlier than expected, RES investment costs have significantly reduced
 - Ideally, we would now have RES investment “flooding in” but significant market incompleteness and entry barriers of various kinds
- => Political desire to allow for end users to benefit from these reduced costs for RES**

Don't try to fix what ain't broken

UK energy crisis - time to split the power market?

Published on August 18, 2022



Michael Liebreich

Speaker, analyst, writer, advisor, investor in the future economy. Host of Cleaning Up podcast on leadership in an age of climate change

36 articles

✓ Following

Time to blow up electricity markets

Opinion Piece By Yanis Varoufakis | 31/08/2022

The EU's power sector is a good example of what market fundamentalism has done to electricity networks the world over.

With the end of cheap natural gas, retail consumers and businesses are paying the price for their governments' embrace of a shoddy theory.



VS.

Electricity Market Design and Zero-Marginal Cost Generation

William W. Hogan¹

Accepted: 15 November 2021 / Published online: 24 February 2022
© The Author(s) 2022



Abstract

Purpose of Review Competitive electricity systems arose in the context of thermal generation with dispatchable production and increasing variable costs. This paper addresses key impacts on efficient market design with increasing reliance on renewable energy sources such as solar and wind that are intermittent and have very low marginal costs.

Recent Findings The basics of efficient electricity markets design have been adopted by all the organized electricity markets in the USA. This is the only competitive electricity market design that supports the principles of open access and non-discrimination.

Summary An expansion of intermittent zero-marginal cost generation does not change the fundamentals of efficient electricity market design. Rather, it increases the importance of implementing the design and associated reforms that have been identified from market experience. These include improved scarcity pricing, demand participation, and carbon pricing.

What does not work? Market incompleteness

- Past ~ investment issue in new generation
- Today ~ affordability issue for end users

eex — Products and Units —

EEX GERMAN POWER FUTURE ▼

2022-01-21 Day Weekend Week Month Quarter Year

Baseload

Name	Last Price	Last Volume	Settlement Price	Volume Exchange	Volume Trade Registration	Open Interest
Cal-23	124.00	8,760	122.63	2,592,960	2,540,400	45,897
Cal-24	92.30	8,784	92.13	597,312	1,168,272	11,410
Cal-25	87.95	17,520	87.00	70,080	271,560	2,505
Cal-26	-	-	84.38	-	35,040	198
Cal-27	-	-	83.09	-	-	96
Cal-28	-	-	81.87	-	-	30
Cal-29	-	-	81.40	-	-	-
Cal-30	-	-	80.59	-	-	-
Cal-31	-	-	79.73	-	-	-

EEX FRENCH POWER FUTURES ▼

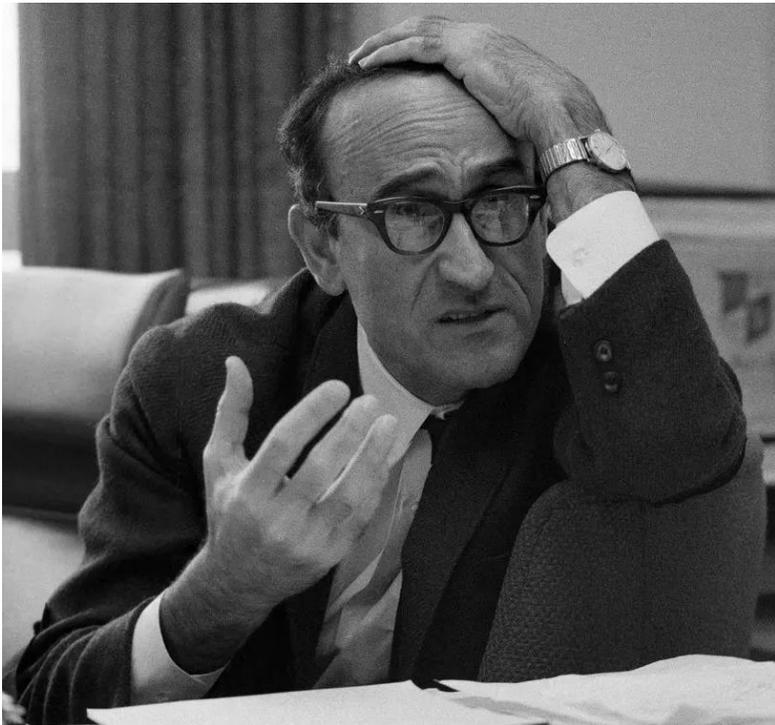
2022-01-21 Day Weekend Week Month Quarter Year

Baseload

Name	Last Price	Last Volume	Settlement Price	Volume Exchange	Volume Trade Registration	Open Interest
Cal-23	131.35	8,760	131.34	8,760	122,640	5,908
Cal-24	-	-	95.54	-	-	599
Cal-25	-	-	91.43	-	-	92
Cal-26	-	-	-	-	-	-
Cal-27	-	-	86.08	-	-	1
Cal-28	-	-	-	-	-	-

However, what if the first-best is deemed insufficient?

“A good mix of regulation and markets is better than no market at all”
(Alfred E. Kahn, 1988)



“I've abandoned free-market principles to save the free-market system”
(George W. Bush, 2008)



Different issues require different solutions

- **A different issue: resource adequacy (general)**
 - Problem: uncertainty when financing new investment
 - Potential solution: capacity remuneration mechanisms
- **Another issue: resiliency (e.g., Puerto Rico, Texas)**
 - Problem: business case to hedge against very low probability high-impact events
 - Potential solution: mandates to tackle underinvestment in resilience
- **Another issue: decarbonization (e.g., EU, US)**
 - Problem: RES initially too expensive to make a business case (innovation spillover)
 - Potential solution: feed-in tariffs, CfD auctions, tax credits,...
- **The issue here: affordability**
 - Problem: insufficient use (and availability) of hedges
 - Potential solution: procure “bill insurance” to cap monthly bills on behalf of a subset of end users

Affordability options: centralized regulatory-led “bill insurance”

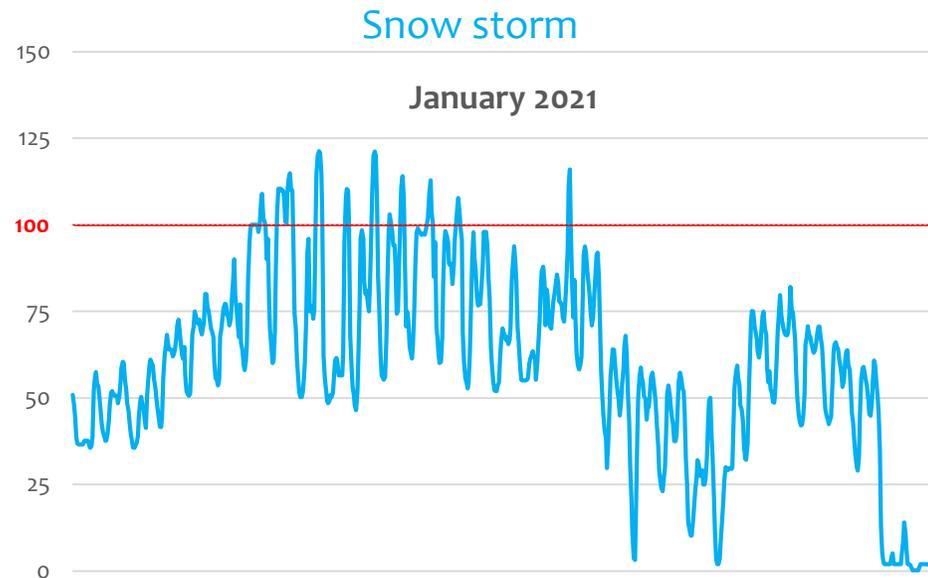
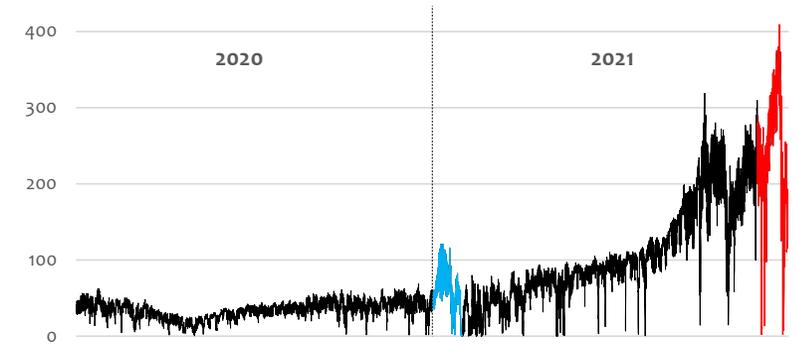
- **Contract: monthly-settled call option with a strike price equal to “bill cap”**
 - *Why an option?* We want to protect consumers against high bills, not fix their price
 - *Why monthly settled?* We want to protect against high bills, not high (hourly) prices
 - *Why centralized?* Transparency, less coordination needed
 - *What volume?* Central entity determines on behalf of consumers deemed needing protection
 - *Who will be the seller?* Technology agnostic but physical and/or financial backup required
 - *Contract duration?* 5-15 years
 - *Cost allocation option premium?* Levy (cfr. RES support but not €/kWh) or state budget
 - *Pay-out?* Lump sum payment or cheap “energy” block (via predefined key)



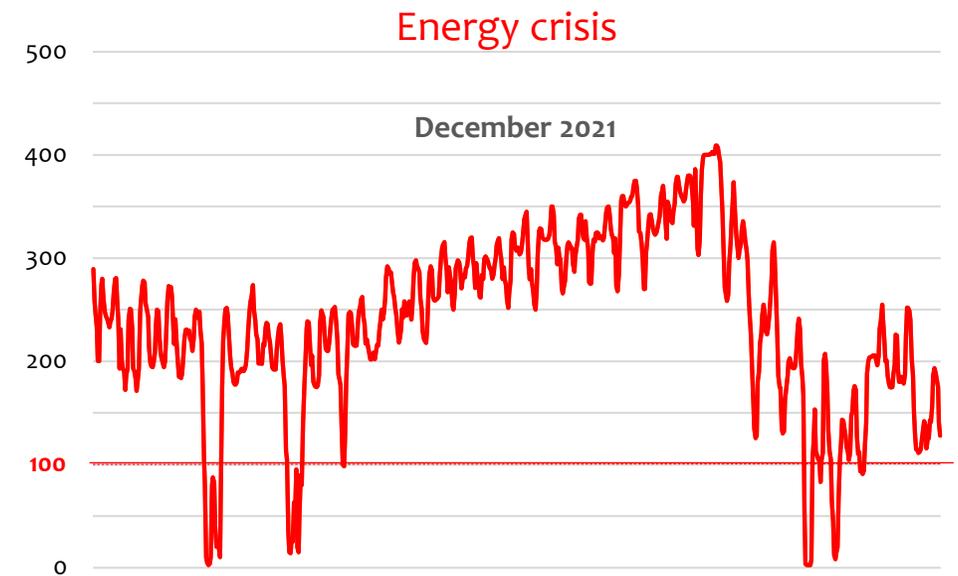
Affordability options

- **Illustrative example for Spain**

- Different impact of the option depending the nature of the price event



51 hours with prices above 100€/MWh,
January average price 60€/MWh,
Affordability option not exercised



December average price 239€/MWh
Affordability option in the money
Pay out of 139€/MWh
(\approx € 42 if 300 kWh per vulnerable consumer)

What to do with new access to the network?

	<i>Choices</i>	
<i>Connection</i>	First come first serve	Auction for access
<i>Exposure to the price risk</i>	Merchant	Auction for long-term hedge

} Bundled

Big issue is not lack of willingness to invest in new capacity (especially renewables) but physical network access, NIMBY, permitting,...

Contracts for new (renewable) entrants

- **Counterparty:** government + market parties (“Pool for LT-contracts”)
- **Length:** 10-15 years
- **Objective:** risk sharing while minimally interfering with the short-term dispatch
- **If bundling access and contracts: two possibilities (not mutually exclusive)**
 - *Stability CfD:* competition for the strike price of CfD -> “Bill/revenue stabilizer”
 - *Affordability Option:* competition for a premium of a call option with a strike price set equal to maximum tolerable average electricity price+ leave room for bilateral deals (PPAs etc.) to sell the energy-> “Bill protection/revenue cap”
- **Volume of the contracts:** “yardstick” approach
- **Settlement of the contracts:** monthly or alike
- Hard to organize technology-agnostic auctions
- Increased risk for generators but more efficient coordination with spot
- However, higher demand for connections than supply of connections

The Energy Journal, Vol. 44, No. 3. Copyright © 2023 by the IAEE. All rights reserved.

**Efficient Renewable Electricity Support:
Designing an Incentive-compatible Support Scheme**

David Newbery

How to engage with existing generation?

- Imposed revenue cap cannot (?) last forever
- Pace of new entrants with contracts protecting the consumer-side might be too slow to be ready for a next “shock”
- *Option A*: Force or negotiate contracts with incumbents? Not the preferred route
- *Option B*: Organization of auctions for the sale of affordability options
 - Regulatory assessment of “affordability risks” (cfr. adequacy assessment)
 - Maximization of competition:
 - 1/ limit demand
 - 2/coordinate with new entry

The two key Q&A of my talk

- Q1: Why is there a call for a market reform?
 - Political desire to allow for end users to (more directly) benefit from the reduced costs for renewables
- Q2: What does this crisis teach us?
 - Not that “spot markets are broken” (*but need to be improved)
 - Long-term markets are the issue, go find the solution there
 - Might need to rethink rules around third party access
 - We need improved consumer protection to avoid shooting the messenger (aka “decoupling”) and we do a proposal how

Questions, comments, critic?

Tim Schittekatte
schtim@mit.edu

MIT Energy Initiative & MIT Sloan Business School
Florence School of Regulation