

The Least-Cost Mechanism

**Lower Philippine Electricity Prices
Through Greater Competition**



**Institute for Energy Economics
and Financial Analysis**
IEEFA.org

March 2018

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Rapidly declining costs and technological advances in renewable energy, liquefied natural gas (LNG), energy efficiency and storage create an enormous opportunity for greater use of cheaper domestic alternatives to imported coal and diesel.

Allowing for greater competition is key.

New imported coal-fired power generation costs from Php3.8 to 5.5 per kilowatt-hour (kWh). In comparison, solar power costs Php2.99/kWh, wind is Php 3.5/kWh, geothermal is Php3.5-4.5/kWh and run-of-river hydro costs Php3-6.5/kWh—options that are still hampered by costly and unnecessary red tape. Government action to ease existing regulatory burdens likely would lead to significant cost reductions of these cleaner generating alternatives. Another alternative, onshore wind, remains untapped in the Philippines, but in many countries it already is cheaper than solar.

A recent report from [Lazard](#), a leading global financial advisory and asset management firm, concludes that building new wind and solar farms costs less than continuing to run existing coal or nuclear plants.

The levelized cost of energy for both utility-scale solar and onshore wind technologies globally is down 6% from last year. Importantly, there are no indications that this deflationary trend will slow anytime soon, with economies of scale and technology development continuing to push prices downward.

The World Moves Toward Renewables

The maturation of the renewable energy sector is apparent in the numbers. In 2016, the latest full of available data, global acquisition activity in the renewable energy sector rose by 17% to US\$110.3 billion. New investment in solar and wind generation assets in 2016 totaled US\$113.7 billion and US\$112.5 billion, respectively¹. Countries around the world have taken note of these changes and are moving quickly to increase their use of renewable energy.

In February, for example, a 500-megawatt (MW) wind tender in Gujarat, India, was finalized at a record low Rs2.43/kWh (equivalent to US\$0.04/kWh or Php 1.90/kWh)². This zero-subsidy tariff is fixed in nominal terms for 25 years—baking in annual electricity sector deflation for decades to come. Indian wind prices have fallen 50% in just two years, and this record low wind tariff is 8% below the previous record low, set in October 2017. This 50% price deflation means near-zero-emissions wind is now at cost parity with solar as the two lowest-cost sources of new electricity generation capacity. That said, India's success is not an isolated case.

Last year in Taiwan, renewable energy developers including Denmark's Dong Energy (now Ørsted), Australia's Macquarie Group and Canada's Northland Power, filed investment applications for offshore wind projects that could be worth almost US\$60

¹ <http://fs-unep-centre.org/sites/default/files/publications/globaltrendsrenewableenergyinvestment2017.pdf>

² http://www.business-standard.com/article/companies/wind-power-projects-auction-in-gujarat-tariff-tumbles-to-rs-2-43-per-unit-117122100993_1.html

billion once constructed. And South Korea just committed to an exceptionally ambitious fivefold expansion of its existing renewable energy generation by 2030, from the 11.3 gigawatts (GW) installed as of 2017 to 58.5 GW.³ Further, Mexico, Chile, Germany and the United Arab Emirates all have seen cost reductions of up to 50% since the start of 2016.

As the Philippines plans for its future energy needs, it can and should take note of these developments and respond accordingly—there are opportunities now to transform the nation's energy sector into one built around sustainable resources while simultaneously cutting costs.

Unfortunately, at present the Philippines government remains committed to a high-risk fossil-fuel electricity-generation strategy. The 10,423 MW of coal-fired capacity in the development pipeline approved by the Aquino administration is at serious risk of being stranded, imposing enormous costs on the national economy and consumers alike. With renewables already cost competitive with coal, building this new fossil fuel capacity as planned would be imprudent and short-sighted. While all signs point to continuing cost declines for renewables, any new fossil-fuel capacity would require costly imported coal purchases, likely resulting in long-term increases in electricity prices. In addition, as variable renewable energy generation is brought online, it will undermine both the need for and efficiency of 24/7 baseload power, further straining project economics and threatening additional electricity price increases for consumers.

As such, IEEFA recommends that those projects with existing power purchase agreements (PPAs) be allowed six months to switch from coal to cheaper options such as geothermal, natural gas, solar and wind.

The Need for Greater Competition

The government has made some strides in boosting generation competition in the Philippines, particularly through enforcement of the competitive selection process (CSP). This process, which must be done on a technology neutral basis to be truly effective, has helped move the country toward lower-cost generation and, crucially, has ended self-negotiated generation rates. However, more work needs to be done.

IEEFA suggests that adopting a least-cost mechanism (LCM) would introduce greater competition into the generation sector. Adopting the least-cost approach we describe below would benefit all involved. Specifically, it would:

- Help push prices down for consumers
- Streamline the procurement process for developers, utilities and regulators
- Ensure that procurement of generation to meet renewable portfolio standards is subject to competition, keeping costs down

³ <https://www.pv-tech.org/news/south-korea-announce-8th-basic-plan-for-long-term-energy-generation>

- Guarantee that generation benefitting from feed-in-tariffs is subject to price competition
- Enable the integration of larger amounts of variable renewables onto the grid

For the mechanism to work, however, certain requirements must be included in the new structure. In addition to being technology neutral, the system must be designed to limit the ability of project developers and utilities to pass fuel costs through to consumers. Fuel pass-through clauses significantly distort the market, putting all the risk on consumers and undercutting the economics of fuel-free renewables such as wind, solar and hydro.

As a first step in this direction, power supply agreements (PSAs) for fossil fuels such as coal and diesel can be awarded going forward based on how much the power generator is willing to step back from the traditional automatic cost pass-through model and begin carrying more of the fuel-price risk.

Many such deals in India now have power generators agreeing to limit fuel-price pass-throughs to 30% instead of 100%. In some cases, power generator proposals are being presented with fuel hedging contracts, which reduce exposure to cost volatility. Such contracts also are already widely used by airlines, cruise lines and trucking companies, and can certainly be tapped by the electric power industry.

LCM Mechanics

1. The distribution utility issues a call for technology-neutral tenders to install a certain amount of electricity. Ceiling prices should not be disclosed to project developers that want to participate to ensure greater competition. Streamlined administrative procedures, with communication and transparency provided equally to all project developers, are essential.
2. Participating project developers submit a price per unit of electricity at which they will build the project. Utilities can use one of two ways to entertain submissions:
 - A. Project developers simultaneously submit their price at which the electricity would be sold under a PPA. A third-party manager or the utility ranks and awards projects until the sum of the quantities that they offer covers the volume of energy being requested. This option has the benefit of simplicity, is easy to implement, fosters competition and avoids collusion. Post tender award disclosure of all final submissions also would improve transparency.
 - B. In the initial round, the third-party manager or the utility offers a price, and developers submit the amount of power they would be willing to provide at that price. The third-party manager or the utility then progressively lowers the offered price in successive rounds until the quantity submitted matches the quantity to be procured. This option is more difficult to implement but allows for fast price discovery as well as greater transparency.

3. Each offer is screened by the utility for viability (including proof of financial capability, secured land, environmental license, grid connection, etc.) and then selected based on price, starting with the least-cost project, until the utility reaches its megawatt-hour (MWh) limit for that round. Each offer is subject to strong compliance rules (including penalties, submission bonds, project completion guarantees, etc.) that reduce the risk of under submissions, project delays, and project failure.
4. Capacity remaining at the end of each round is added to the next round.
5. Winning submissions are given a standard contract from the utility, which can then go through an expedited regulatory review process before the Energy Regulatory Commission (ERC).
6. The ERC evaluates the contract based on the LCM price and other criteria the ERC deems relevant.

Conclusion

Excessive reliance on imported coal is one of the main reasons the Philippines has the highest electricity prices in the Association of Southeast Asian Nations (ASEAN) region. Natural gas, solar, wind, run-of-river hydro, geothermal and biogas are attractive, viable domestic options that can be combined to create a cheaper, more diverse and secure energy system.

Existing market structures are slowing the adoption of these cleaner and increasingly cheaper resources. The Philippines government can inject more diversity and more energy security into the electricity system—while helping lower costs consumers—through technology-neutral procurement and the LCM bidding process described above.

About IEEFA

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