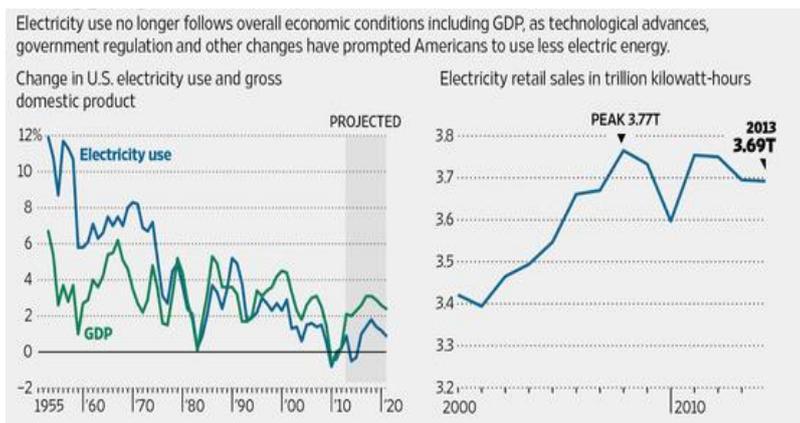


## As demand falls so do utility revenues—Perry Sioshansi’s Letter from America

Utility business was never glamorous or exciting—but you could normally count on predictable sales and revenue growth. As everything gradually gets more efficient and as mature economies slowly move away from energy-intensive industries, however, electricity demand growth is slowing, or in some cases actually falling, which— assuming all else remains constant—leads to flat or declining revenues. Many believe that US electricity demand has already peaked (graph below left).

### US electricity demand: asymptotically approaching zero



Source: The Wall Street Journal based on EIA data

This would be bad enough, but there are indications that things can get even worse because a growing number of customers can generate a large portion of their energy service needs through distributed self-generation, be it solar panels on the roof, a micro-generator or fuel cell in the garage or an arrangement with another customer who has excess power to spare. There are examples of semi-independent networks or micro-grids that virtually produce as much energy as they consume. Moreover, as buildings move towards zero net energy (ZNE), they buy relatively little or none from the grid.

Putting energy efficiency—using less—with distributed self-generation—producing more of what one needs— together one gets distributed energy resources, or DERs. For an industry whose basic business model was built on growing volumetric sales and flat or falling retail tariffs, this is an unpleasant double whammy even if the regulatory compact— still prevalent in many parts of the US—allows the incumbent utilities to raise retail tariffs to adjust for the falling volume. As retail tariffs rise, more consumers will find it attractive to invest in DERs, leading to the so-called death spiral.

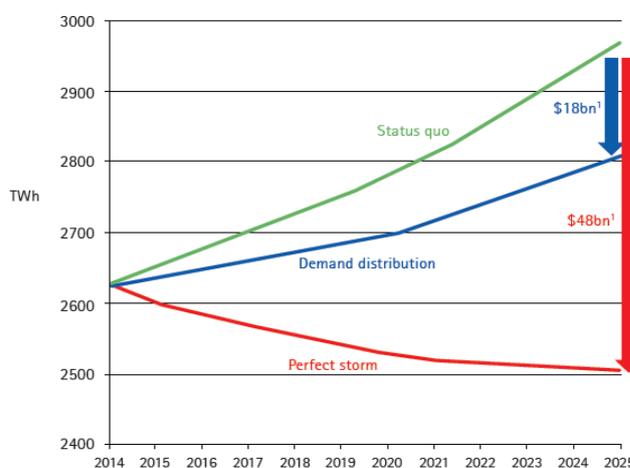
Trade press has been full of speculation about how the future may unfold and what the longer-term impacts of DERs may be on the industry. Accenture, a consultancy, has released a report that examined three future scenarios: status quo, demand disruption and perfect storm. The prognosis gets progressively worse as the names imply (graph on right).

The status quo scenario might materialise if one assumes that all existing support and subsidies for distributed generation (DG), most notably net energy metering (NEM) laws that make solar PVs such an attractive option in sunny regions with high retail tariffs, will be phased out by 2018. This scenario also assumes no breakthroughs on technology costs and low customer interest in uptake of DERs. Very few experts believe that such a combination of factors are likely to prevail, making this scenario “wishful thinking” for those who like the status quo.

### Which scenario do you prefer? Bad or worse

In the US, revenue reduction based on reduced load could be between \$18bn-\$48bn.

Accenture Model – US Residential and Commercial Demand (excluding prosumer generation)



Source: Accenture

The other two scenarios, as you might expect, make other assumptions on the key variables and end up with rather different results with significantly lower sales and revenues for the industry. Accenture does not dwell on how they arrived at the numbers, only claiming that US residential and commercial sales, excluding prosumer generation, could be anywhere from \$18bn-\$48bn lower by 2025 compared to the status quo scenario.

A similar exercise for Europe yields results that are even worse—a revenue drop of €39bn-€61bn (\$44bn-\$69bn) from the status quo scenario by 2025.

Given the recent pace of growth of DERs, the status quo will most likely not prevail. The question is how much of an impact may be expected. As the Accenture analysis suggests, the key drivers are changes in DER technology, cost, the level of subsidies, be it NEM laws—in the US—or feed-in-tariffs (FiTs) in Europe and customer uptake of emerging technologies. And in this case, one expert's guess is probably as good as another.

Those who say reduce or remove the subsidies—say the prevailing NEM laws in the US—and the distributed generation craze will fizzle may be surprised to learn otherwise. In the case of sunny Queensland in Australia, for example, the incredibly generous FITs, at one time 44 cents/kWh when retail tariffs were roughly half as high, have been substantially reduced and removed and yet customers continue to install solar PVs on rooftops. Not as fast as they used to, but they still do. In the case of Energex, the distribution company that serves the greater Metropolitan Brisbane, the initial rush to take advantage of the 44 cents/kWh premium FIT is over, yet customers continue to install solar PVs at a rate exceeding 2,000/ month.

Another worrying trend—that is if you are an incumbent utility keen on selling more kWh—is that new buildings are far more energy frugal than the existing ones, which suggests that as time goes on they will consume fewer kWh for cooling, heating, lighting, ventilation, appliances, and everything else. In fact, within the next few years, many new buildings will qualify as ZNE, which means they will produce as much as they consume. In California, for example, all new residential buildings will have to meet such a standard starting in 2020; 2030 for new commercial buildings.

Moreover, rapid advances in micro-grid technology means that entire office buildings, shopping malls, hospitals, university campuses and military facilities can operate energy systems with little net consumption from the outside grid.

It is not hard to see why Accenture arrived at its projections. If anything, the consultant may be off in under-estimating the potential level of revenue erosion that could be experienced by 2025. Europe can prosper economically while using 33% less energy by 2030. More inefficient economies can do even better than that—which is hard to believe.

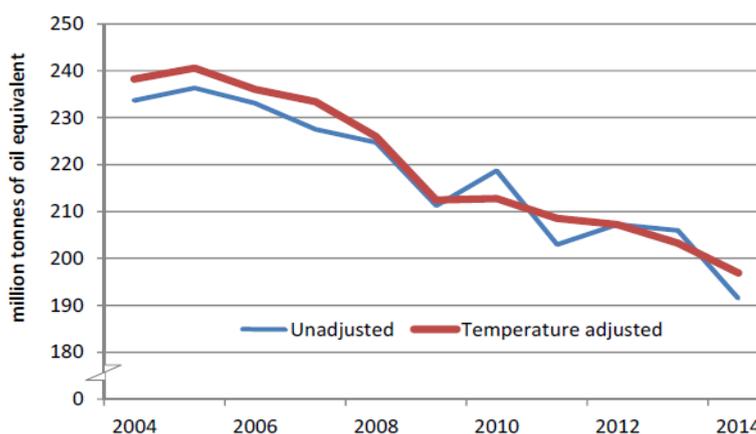
And it is not just electric power sector that is facing declining sales. Energy consumption in many mature economies appears to be going south, with no end in sight as evident in the UK (see graph above). The trend started prior to the global financial crisis in 2008, so cannot be attributed to it.

Such trends are among the reasons to question the *status quo*, wherever you encounter it.

**Perry Sioshansi is a specialist in electricity sector restructuring. He is founder and president of Menlo Energy Economics and is the editor and publisher of EEnergy Informer, from which we have sourced this article, and which we commend.**

**It's not just electricity demand that is falling; same applies to energy**

### UK primary energy consumption



Source: DECC