Answer **all** questions.

**Question 1**

**Utility Market**

**Extract 1: Power growth slows**

Utility companies operating in competitive U.S. utility markets are struggling to make money as falling electricity consumption threatens their profits and forces the utility firms to rethink their long-held business models.

For decades, utility demand climbed steadily, often in lock-step with the economy, providing utility firms with a reliable increase in sales plus a profit that is typically set by state regulators. But the economic crash in the last decade has poked a hole in that business model. Power demand is flat lining, energy efficiency programmes are eroding the likelihood of future growth and the spread of rooftop solar systems is serving as a warning to large utility suppliers that they no longer hold their customers captive. However, it is unlikely and uneconomic for a large number of customers to go from the traditional power supply to solar systems without any subsidies until 2030 or beyond.

Source: Darius Dixon,  [http://www.politico.com/](https://newsroom.accenture.com/), 24 October 2014

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| Figure 1: Prices of solar power vs. average electricity prices |
| **US Average Electricity Price****Solar Electricity Price** |
| Source: DOE NREL Solar Technologies |

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# Extract 2: Exelon Will Acquire Pepco and Form Largest Utility Firm in the US

Exelon Corporation announced on Wednesday that it will [acquire Pepco Holdings](http://www.businesswire.com/news/home/20140430005552/en#.U2D5YK1dWu1) in a $6.8 billion all-cash transaction to create a mega-utility serving the Mid-Atlantic and Midwest.

Exelon and Pepco already have regional synergies in the Mid-Atlantic that should allow the companies to streamline some back office functions and share lessons learnt across the two companies' urban utility firms that have invested in technologies such as smart meters, distribution automation and advanced outage management systems. Expanding regulated businesses and diversifying operations reduce risk profiles. Many utility firms look to expand their regulated businesses to increase the stability and predictability of cash flows, while also maximising operational efficiency and spreading operating and maintenance costs over a wider customer base.

The merger is subject to approval from the Federal Energy Regulatory Commission, an antitrust review, and approval by public service commissions in the states where Pepco operates. The companies hope to close the deal in the second or third quarter of 2015.

Source: Katherine Tweed, <http://www.greentechmedia.com/>, 30 April 2014

**Extract 3: Revenue Decoupling for Utility Firms**

Electric utility firms are responsible for delivering electricity to every home, business, and public building in the United States. It’s no easy task, especially when outside forces—technology, innovation, and policy and economic changes—make the old ways of doing business obsolete.

Utility firms are facing this dilemma today. The old business model—one based on selling more and more electricity—doesn’t work anymore. As demand for energy falls, it will take a suite of policy and business tools to keep utility firms strong and dependable—and keep the lights on for consumers.

Revenue decoupling is one way to work around this problem. At a basic level, revenue decoupling is an accounting tool that ensures utility firms collect the amount of revenue they are allowed by state regulators. Decoupling essentially separates the link between utility profits and its sales revenue to create profit sustainability for utility firms.

What we pay for electricity depends on a rate approved by regulators. This rate is based on the anticipated amount of energy customers will use in the future; regulators and utility firms must plan ahead so that they can develop a plan to provide steady power that covers their cost of production at the same time. Without decoupling, utility firms will collect revenue based on only predicted usage numbers.

But the actual amount of energy customers use and the actual amount of money utility companies bring in may be higher or lower than forecasted for a host of reasons, including the implementation of energy efficiency measures, increased energy conservation, local power generation like small wind and solar, and even weather.

For example, if states have a decoupling policy in place, and actual electricity sales were higher than expected, the company would lower rates slightly the next year to refund customers the extra money they paid. If electricity sales were lower than what the utility firms and regulators expected, the company increases rates slightly the next year to make up the difference.

Decoupling benefits utility firms by relieving the need to sell increasing amounts of energy to cover the costs of generation and infrastructure investments and the costs of providing electricity to customers. It also encourages greener technologies. Reduced energy consumption caused by energy efficiency can help reduce carbon dioxide emissions and protect against climate change. Decoupling allows these to exist without harming the companies' finances.

In our rapidly changing energy world, it is unclear what the utility market of the future will look like, and what types of services it will provide. However, it’s clear that the current business model which relies on selling more and more electricity is no longer compatible with today’s energy landscape. Furthermore, a utility firm which is increasingly worried about selling certain amounts of energy to cover its operating costs will be more and more resistant to changes to its business model in the future.

Decoupling can break this reliance on increasing electricity sales revenue and open the door to new ways for utility firms to remain economically strong.

Source: <http://fresh-energy.org/>, 3 October 2014

**Extract 4: U.S. state policies to reduce carbonemissions from power plants**

Power plants are currently the nation’s largest source of greenhouse gas emissions — especially the dangerous carbon emissions known to increase global warming. In June 2014, President Obama proposed the [Clean Power Plan](http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule), which will require states to reduce carbon pollution from power plants, cutting emissions to 30% of 2005 levels by 2030. These 50 states must adopt and enforce effective carbon pollution reduction measures for its own electricity sector. These approaches include:

* Emission caps. Plant-level greenhouse emissions to be reduced by caps and targets that set specific reduction goals.
* Public benefit funds. This invests in research and development for energy efficiency and renewable power
* Plant-level reductions in dangerous emissions have happened in states with decoupling programme that separates the link between utility profits and its sales revenue

Some policies adopted by the states may have been ineffective because they are too vague or insufficiently publicised and enforced. More successful policies tend to have specific, concrete goals that can be objectively measured. Of course, it is important to acknowledge that emission levels are influenced by the characteristics of power plants themselves, as well as by state policies. On average, plants that are older or rely primarily on coal for fuel have significantly higher emissions. In contrast, lower emissions on average occur at plants with independent system operators and at plants that are part of regional transmission organisations where energy transfers are more efficient.

Source: Journalist's resource, 15 October 2014

**Questions**

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| **(a)** | Compare the price of the solar electricity with that of the average electricity price in US from 2010 to 2030.  | [2] |
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| **(b)** | Explain how the provision of subsidy to the producers of solar systems will affect the following markets:YJC 2016  |  |
|  | **(i)** | Solar power  |  |
|  | **(ii)** | Traditional power supply | [4] |
| **(c)** | Explain two possible sources of market failure that exist in the utility market.  | [6] |
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| **(d)** | Discuss the likely factors that Exelon Corporation would have considered when deciding to acquire Pepco Holdings. | [8] |
| **(e)** | With reference to the data where appropriate, discuss whether revenue decoupling such as that proposed in the US would be the most appropriate way of reducing carbon emission by the power plants. | [10] |

 **[Total: 30]**