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A Dynamic Power Grid for a Dynamic Age Introducing LES to a pricing mechanism that assesses demand, and changes every hour

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A Dynamic Power Grid for a Dynamic Age

Introducing LES to a pricing mechanism that assesses demand, and changes every hour

Lets say you knew someone who would buy a whole pizza when they were a little bit hungry, left their sink running when they weren't using it, maxed out their A/C in their house when they were on vacation, and always kept their stove on just in case they wanted to cook something.

You would probably see this as horribly wasteful, and a terrible drain of money. But every time we pay our power bill, our prices assume we share these wasteful habits. The rate that we pay per kilowatt hour assumes customers are eating the whole pizza, even though most of us may only eat a slice or two.

But this type of pricing seems justifiable; as we are paying for a system that is always at the ready, and can provide us a "whole pizza" of electricity if needed, such as a boiling hot day in late July when we are running the A/C full blast for the whole day.

But there are many other industries that have handled varying levels of customer usage stress without ramping up prices for the whole customer base. For example, we pay different prices depending on our internet speeds, how much mobile data we use, and how much water we irrigate our lawns with. And back in the day (only about a decade or two ago) when phone call minutes were scarce, many plans didn't count it against us when we made our calls during off-peak hours.

Both LES and OPPD have payment plans that charge flat rates regardless of the time that we flip our lights on, charging prices that make sure a grid is ready for peak electrical usage at all times. And the more that you use, the lower your price/kilowatt hour. So the more that you use, the lower your price/kilowatt hour goes. This philosophy may work for buying things in bulk, or buying the large popcorn instead of the medium because it's only a \$1 more, but when it comes to electricity, we need to reward conservative usage.

However, our water bill accelerates in price the more we use, starting off at \$1.34 per unit (100 cubic feet, or 748 gallons) for the first 8 units, jumps up to \$1.91/unit for the next 15 units, and then \$2.96/unit for all units above this amount. When the price increases the more we use, it convinces us to keep our usage low.

Below are a few graphs, illustrating how you get more "bang for your buck" the more electricity you use with LES, but water pricing has the opposite trend.

Why can't our electric utility pricing adopt a little bit of the same philosophy?

In this age, we can easily predict when our power grid will be under the most stress, and the times of the day that people use the most power. To lower the peak usage (AKA the whole pizza price) we could vary electricity prices throughout the day, raising them during midday peak power times, and lowering them during power usage lulls overnight. We also could take a page from the water utilities book and increase prices for exorbitant usage, but lower base rates to encourage not only off-peak usage, but conservative usage.

With this method, people will be rewarded for drying their clothes at night, and for keeping lights off during the day. With a consistently lowered peak power usage, our electrical grid, and our wallets, can rest a little easier knowing that it doesn't need to keep dozens of coal fired power plants on standby just in case we decide to use power.

Our energy providers can also use their profits to steadily introduce more green energy producers, and stabilize the market with low risk, low pollutant power.

A consistent power usage throughout the day means we can rely on more green energy sources like nuclear, solar and wind, as they can be used in combination to provide steady energy 24/7. With varying usage, our grid has to rely on the use of dirtier fuel methods that can be quickly ramped up to handle peaks of power.

It's time that we pay attention to our price per kilowatt in the same way we pay attention to our gas prices, data remaining, minutes spent, messages sent and gallons drained. By rewarding customers for destressing the grid, we can efficiently shrink the size of our grid overall.

Instead of buying a whole pizza, we should buy the slices we need.

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