**Distribution Losses**

* **What is a distribution loss? A distribution loss is when electricity travels through power lines, a proportion of energy is lost as heat, due to the resistance in the lines. When the losses are higher, the greater the distance the electricity travels and the lower the voltages of the line. 66% of the primary energy used to create electricity is wasted by the time the electricity arrives at the customer meter. Ultimately, this affects consumers like us each and every day.**
* **When comparing 2021 to 1980, there is some obvious factors affecting such high and low distribution losses.**
  + **In 2021 for instance, China's power transmission losses amount to around five percent of total production output. In 2021, around 5.26 percent of all power generated was lost owing to transmission and distribution resistance. This was the lowest figure in the period of consideration and follows years of network improvement.**
  + **Obviously, China is one of the most overly populated countries in the world. China has for the past decade (since 2011 overcame US) and reaped the economic dividends that came with having a young workforce to fuel China’s emergence as a global industrial powerhouse. Now, the number of Chinese retirees will soon skyrocket, reducing the size of China’s workforce and putting pressure on China’s social safety net and healthcare system.**
  + **In comparison to the United States, the US has been steady and consistent over time, rather than having exponential growth like China.**
* **Why is distribution losses relevant now to consumers?** 
  + **Reducing distribution losses is important, because that electricity is essentially being wasted and not being used productively.**
  + **Loss factors directly impact the cost of electricity faced by all consumers.**
  + **Distributors need to calculate and allocate for losses arising on their networks, so that the reconciliation process can account for these losses.**
  + **The reconciliation loss factor is used in:**
    - **The reconciliation process by the reconciliation manager to allocate volumes of electricity at grid exit points (GXPs) to participants (both buyers and sellers from/to the clearing manager)**
  + **the retail pricing process by retailers for the sale of electricity to consumers**
  + **in the case of GXP charging networks, the calculation of network charges.**
* **In our daily lives, we use electricity for lighting, heating, cooling, and refrigeration and for operating appliances, computers, electronics, machinery, and public transportation systems.**
* **How can we reduce distribution losses?**

Utility companies, for instance, should consider **increasing cable sizes**, especially in high-usage areas, as higher power cables can help reduce losses. Inadequate sizing of conductors for distribution lines can cause significant losses. Additionally, capacitor banks can be used along transmission lines for power-factor correction, contributing to loss reduction efforts.