

Drive to Net Zero Emissions: Digital can be a powerful abatement lever for downstream utilities



What is the carbon footprint of a T&D or a Retail utility? While GHG reporting for utilities is still in its early days, some definitive patterns are emerging. Broadly, emissions can be classified into two parts: those coming from energy sales and distribution,

and those coming from activities that generate a footprint. Figure 1 provides a good snapshot of emissions by type and source for a typical utility, which is largely representative of the industry, and it shows the focus areas to reduce their emissions.

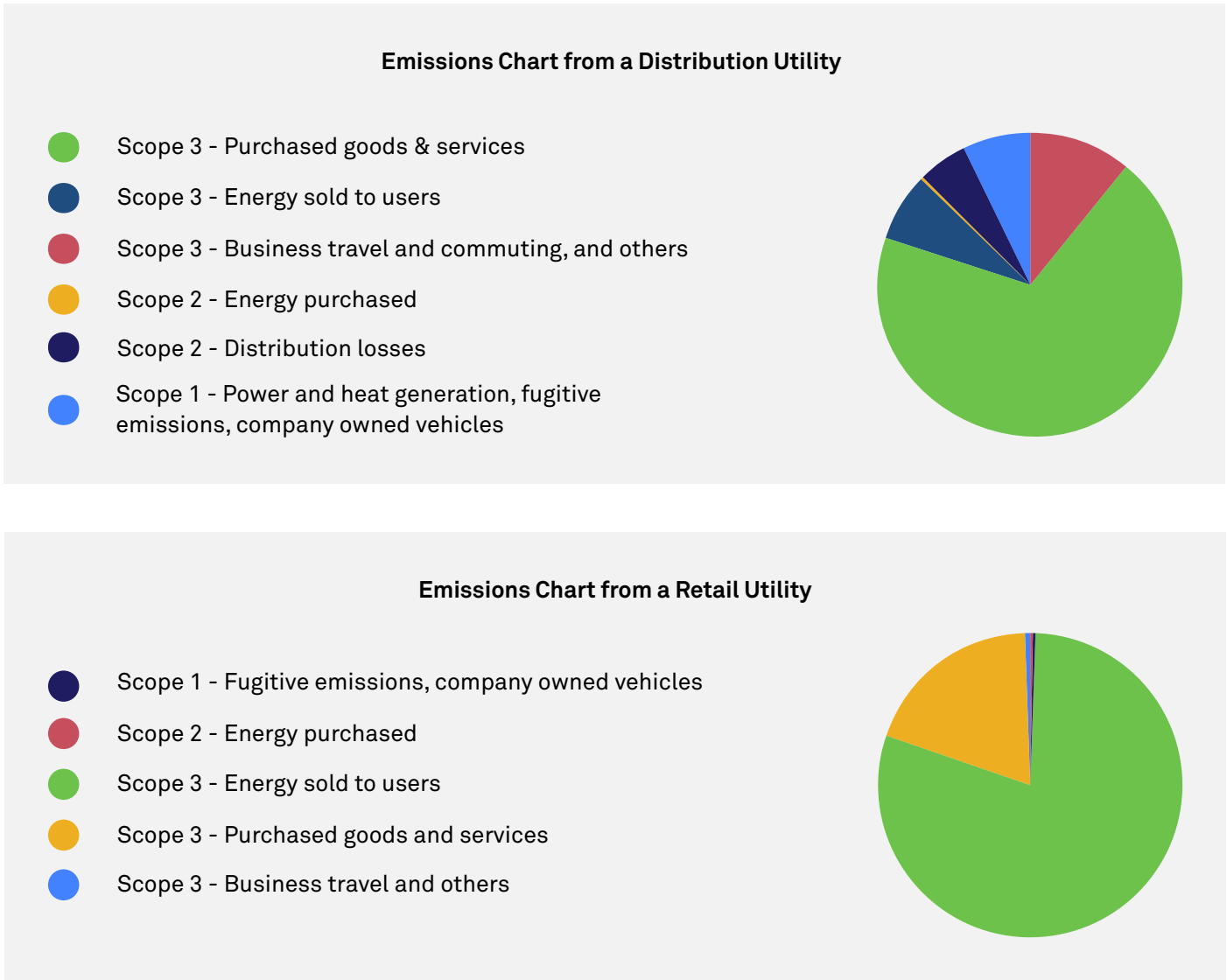


Figure 1: Carbon emissions by type and source for T&D and Retail utilities

As can be seen, energy sold/transported is the primary source of emission (>90%) while remaining 10% is attributable to Ways of Working. While transitioning to green energy will continue to be the dominant strategy in abating carbon, Digital can play a critical role in making the net zero transition faster, profitable and customer centric while lowering cost of operation.

Below are some of the digital opportunities that utilities should consider:

Tracking green energy supply and sale

The ability to track green energy from source to delivery point can help utilities set rates more effectively. It will also assure customers that they are buying green energy. While there are already mechanisms in place through various green certificates (e.g. REC/EAC/OE/REGO) to certify and track green energy, there are limitations to their effectiveness, as explained below:

- These certificates are mostly sold separately from the actual energy sale and consequently the T&D or retail processes do not account for green generation. The energy supplied and sold therefore remains 100% brown, keeping the scope 3 emissions high, while the end customer may have become carbon neutral by purchasing such certificates.
- Unbundled REC certificates make it difficult for retail utilities to include green energy in their tariff structure, creating roadblocks in tariff differentiation and “premiumization.”
- For T&D businesses, not having their green energy accurately accounted for means distribution losses are not reported correctly, causing errors in accounting for renewable energy certificates (RECs) and green energy.

Digital can play a key role here. For example, a blockchain-based certificate repository and management process can ensure that each kilowatt-hour generated from green sources is accounted for (by creating blocks at the point of generation), transferred to relevant entities at the points of handover, and retired on consumption. While ‘green’ can be sold through certificates, kWh accounting can happen more efficiently, opening doors for new business areas, ensuring accurate reduction in scope 3 footprint while creating transparency and auditability in the market.

Reducing consumption through automated energy management

One of the key strategies to reduce an energy company’s environmental impact is to lower consumption. Companies typically accomplish this through programs designed to improve energy efficiency and by better planning for demand-response events. These efforts can be further augmented through digital intervention and automated energy management:

- “Behind the meter” solutions using Internet of Things (IoT) technology can track consumption patterns and enable cognitive algorithms to identify opportunities and enforce automated actions to reduce the energy footprint. Examples include automatically turning the equipment off when not in use, reducing thermostat levels, moving consumption to low-load/low-cost periods, identifying faulty equipment and enabling use of shared assets (e.g. community solar plants, batteries or charging stations).

- Utilities can use “gamification algorithms” to create healthy competition among customers and reward efforts for consumption reduction; this also raises public awareness about sustainability.
- Digital data and analytics can also build the benefits case (environmental impact and cost savings) for moving from gas heating to electrical heating. Better data analysis can identify where a significant emission reduction is possible providing better control in energy management.

Improve ways of working

Virtually every company interested in sustainability strives to be more efficient in its day-to-day activities to reduce Scope 2 emissions. T&D and energy retailers are no different. Actions like the ones below will certainly help reduce emissions, but there is still some work required to quantify their impact on the carbon footprint.

- Embracing the digital remote workplace: Working away from the office doesn’t reduce energy consumption (it will shift to consumers), but it very clearly reduces the energy of commuting. As normalcy returns after the pandemic, it may still be useful to keep some portion of the work offsite – and these environmental gains will continue to make a difference.
- Moving to the green cloud: Moving IT infrastructure to the cloud (assuming it’s powered by green energy) can generate a significant reduction in energy consumption. IT usage in the cloud is heavily optimized, making it twice as energy-efficient as on-premises data centers. (Wipro’s recent Cloud Leader Roadmap explores this topic as well.)
- Digital fieldwork: Augmented and virtual reality, video analytics, IoT, and artificial intelligence can radically reduce the volume of fieldwork through automation, insights, and less need for travel by energy company technicians. This reduces energy consumption, which further reduces the environmental impact.

Reducing the carbon footprint is a strategic goal for virtually every enterprise, but it’s especially important for energy companies. There are multiple approaches to the challenge, but understanding the actual impact can help enterprises get the maximum benefit from their sustainability efforts. Wipro through its Energy Transition practice, commitment to net zero and through its heritage in Energy and Utilities space is well placed to address these digital needs.



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