

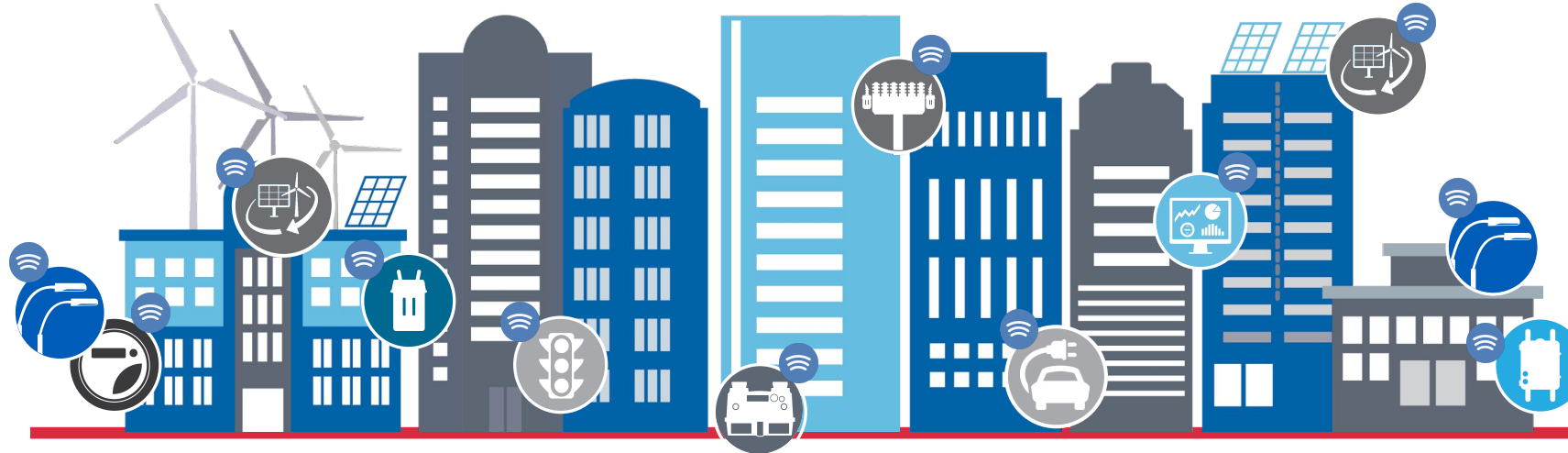


AEG - Chicago

Mark Braby, December 9 2021

Itron Solutions Manage Critical Infrastructure

 Itron connects critical infrastructure and enables outcomes via our platform



ITRON ENABLES OUTCOMES:

- » Smart Energy
- » Smart Water
- » Smart City



Advanced Metering Infrastructure

Two-way, Transport Agnostic, Communications



Distributed Intelligence

Delivering Intelligence and Applications to the Edge of the Network for Demand Response & More



Distribution Automation

Advanced Grid Control



Streetlight Canopy

Intelligent Lighting & Increased Network Coverage



Demand Response and Distributed Energy Mgt

Analytics and Orchestration of DERs



Smart City Solutions

Connecting Communities to Outcomes such as Safety, Traffic, Smart Parking, Intelligent Transport, Kiosks, and Environmental Sensors



Electric Vehicle Management

Charging Management for Grid Operators and End Customers



Smart Water

Measurement, analytics and optimization of water usage

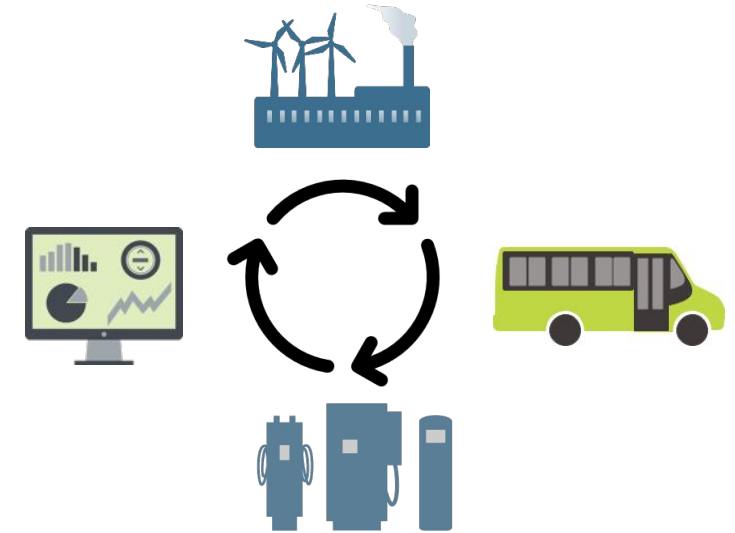
Root Problem(s) for this Topic

- >> Topic: Real-time emissions and price signals
- >> Utility rate structures reflect a forecasted cost of generation + installing & managing grid infrastructure at a determined rate of return. These rate cases happen every 3 years
- >> Carbon emission calculations are based on an annual emissions factor set by the EPA, and calculated by energy consumers on an annual, backward-looking basis. All customers that use the same kWh look the same from a GHG perspective
- >> EVs can have a massively positive impact on emissions, but only if the charging load is delivered via clean energy
- >> In some parts of the country clean energy generation is being curtailed

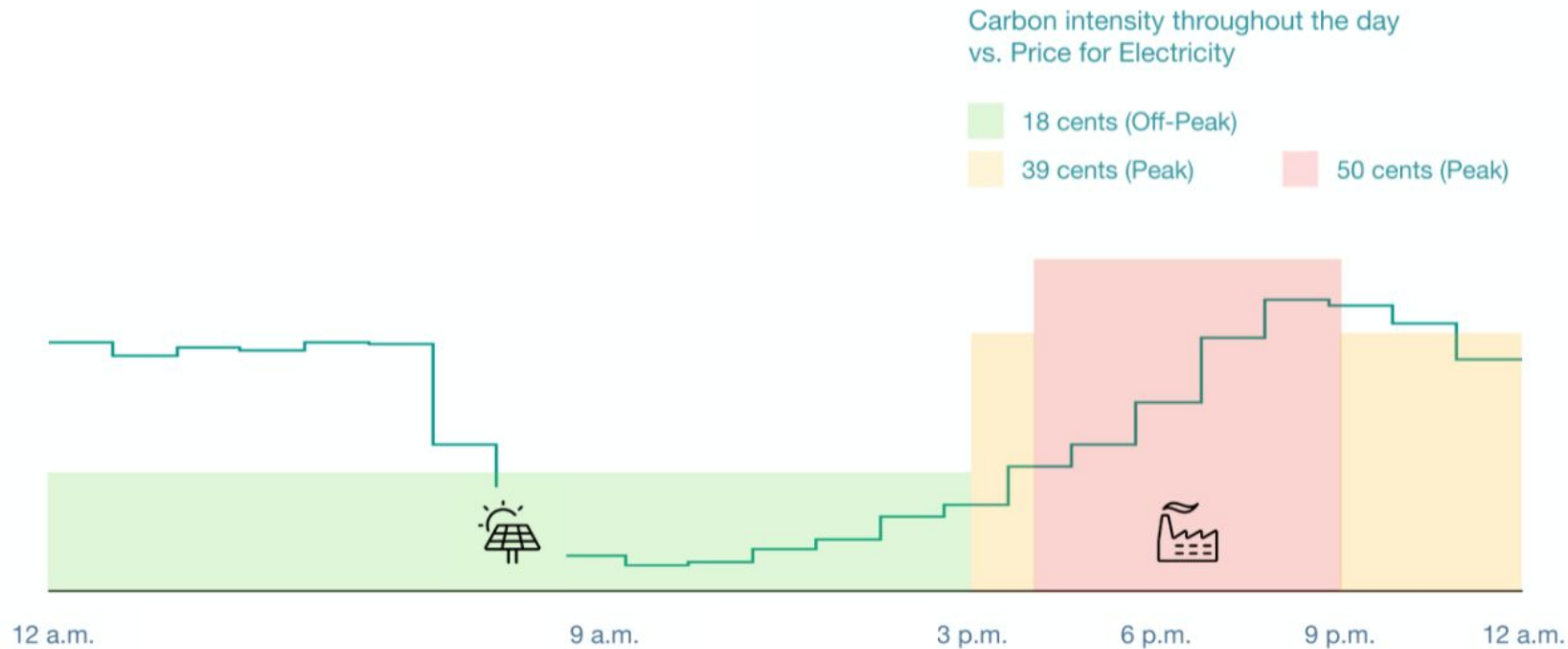


Key Obstacles to Overcome

- >> Utilities need to understand real-time energy delivery cost structure and emissions factor
- >> These factors need to be signaled to energy customers and ultimately reflected in energy (power) pricing that drives the right behaviors
- >> EV Charging needs to be smart
 - Knowing when and where generation is cleanest will ensure EVs are charging with the cleanest energy possible.
 - By “signaling” to charging customers that the grid is congested, charging schedules can be altered



Example



Source: Carbonera

Fleet Operator

“My vehicles return at 5pm, but energy pricing is high at 5pm because solar generation is decreasing. I am going to delay charging until 3am”



Individual EV owner

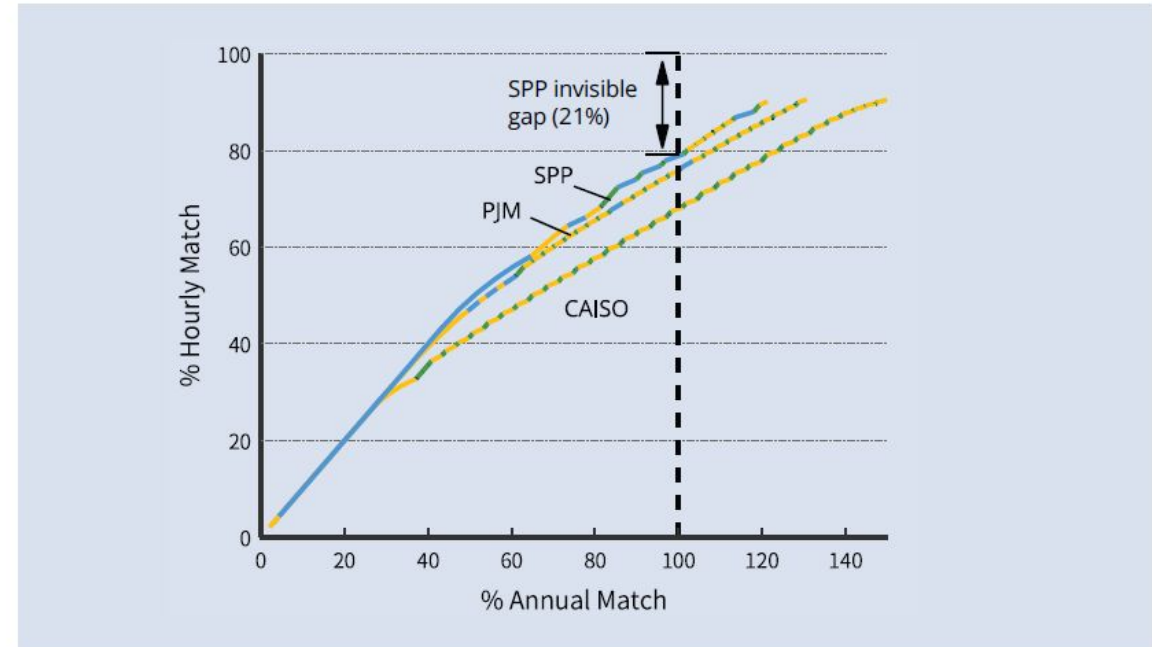
“I get home from work and plug-in, but my utility is telling me the grid is dirtiest at this time. I’m going to delay charging until cleaner energy is being produced”



Consequences of addressing/not addressing

- >> Accelerates net zero plans from utilities
- >> Provides accurate signals to fleet customers to help them make decisions
- >> Drives 24/7 renewable energy, REC matching
- >> Reduces clean energy “invisible gap” and cost of meeting clean energy targets (reduced storage needs)
- >> Leads to smarter and more cost-effective EV charging for fleets

Exhibit 9 “Invisible gap” between hourly and annual carbon-free energy procurement



Drives more cost effective, accurate, and efficient reduction of GHGs

Final Statement

>> Regarding Mobility & Transportation, to achieve Chicago's Carbon & Equity goals, a critical obstacle to overcome is:

Enabling an energy price structure that accounts for 'real-time' emissions signals and grid congestion that can be utilized for smart EV charging, starting with public and private fleets such as the CTA