

TFLEX

Mobility Trends

October 31, 2022

Matthew Burks, E Source





Agenda

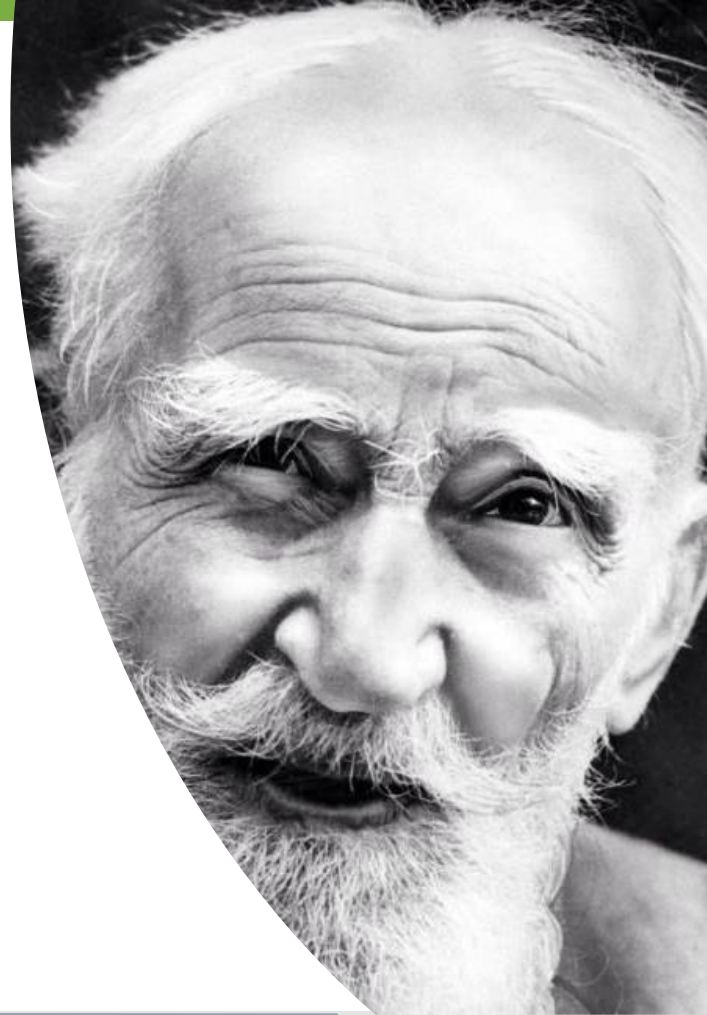
1. Context
2. TE Planning & Infrastructure Efficacy
3. Data
4. Equity
5. TE & Smart Cities

Context

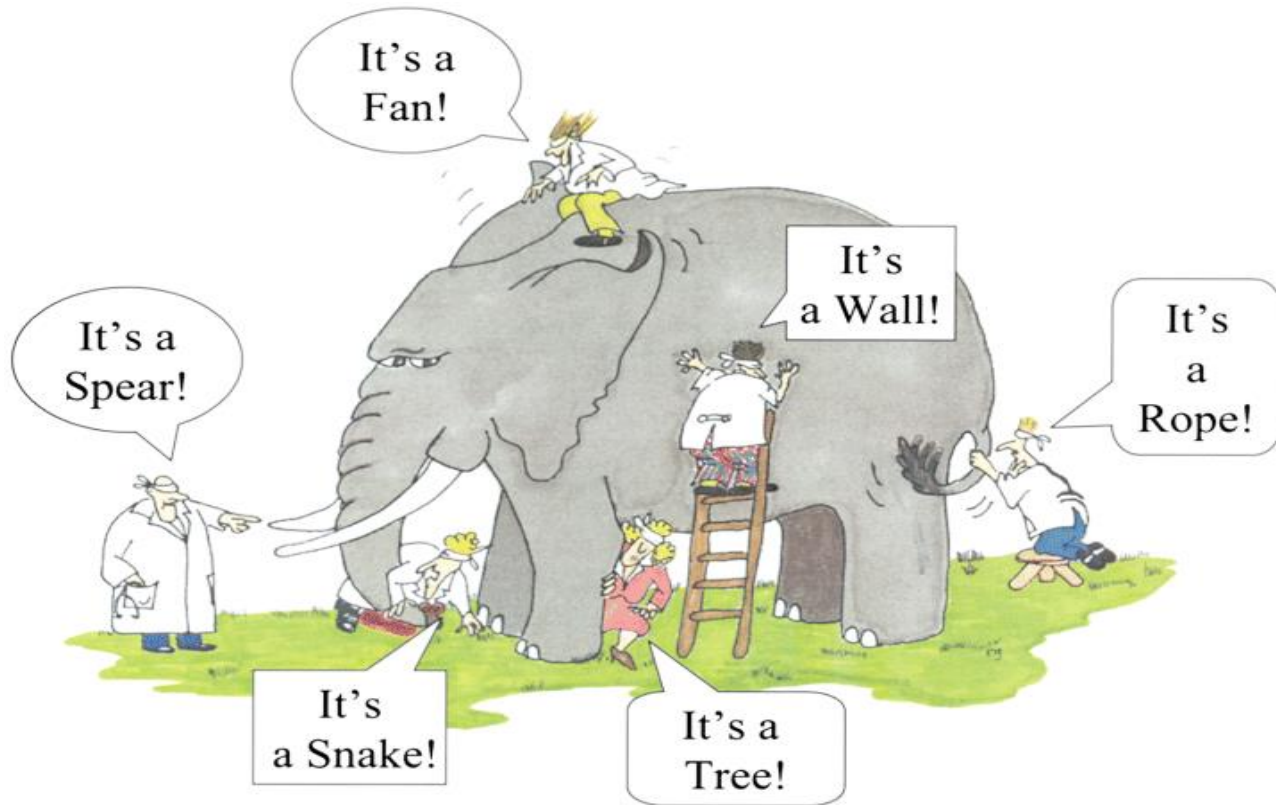


“The single biggest
problem in
communication is the
illusion that it has taken
place.”

--George Bernard Shaw



Building A Shared Reality



"...Though each was partly in the right, and all were in the wrong!" John Godfrey Saxe



The look of alignment?

TE Planning & Infrastructure Efficacy





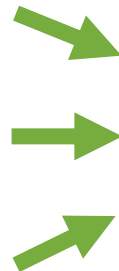
DENVER
THE MILE HIGH CITY



Transportation Electrification Stakeholders

- | | | |
|-----------------------------|---|--|
| ▪ OEM + R&D | → | ▪ Vehicles, services & innovation |
| ▪ DOTs | → | ▪ Planning, infrastructure, services & funding |
| ▪ Utilities | → | ▪ Power infra, programs & services |
| ▪ Broadband + R&D | → | ▪ Comms infra, programs, services & innovation |
| ▪ Transportation/City EPCs | → | ▪ Transp. planning, construction & maintenance |
| ▪ EV Infrastructure Leaders | → | ▪ Infra. planning, construction & maintenance |
| ▪ Innovators | → | ▪ New services, business models & products |
| ▪ Data & Data Science | → | ▪ Data infrastructure, planning & optimization |
| ▪ Finance (VC & PE) | → | ▪ Funding |
| ▪ Oversight Bodies | → | ▪ Planning & policy |

Customers



Transportation Electrification Plans (TEPs)

TEPs typically include:

- Plan spending or total EV portfolio budget
- Customer rates and incentives to accelerate EV adoption
- Customer outreach and education programs
- Infrastructure plans to support additional loads and to integrate renewables

Do not currently contain:

- Detailed information about exactly where TE infrastructure will be deployed over time
- Where upgrades to the distribution grid will be required
- Limited 5 - 10 yr views and rarely consider more than impacts to service-level transformers
- Aggressive electrification scenarios

Current Challenges

1. Broken equipment and extended down times
2. Stranded assets and underutilized equipment
3. Proprietary networks and land grabs
4. Interconnect queue bottlenecks
5. Proprietary “charging network” memberships
6. Transportation electrification equity
7. Demand charges
8. Rates
9. Resiliency
10. Etc.

Investing in EVSE where needed

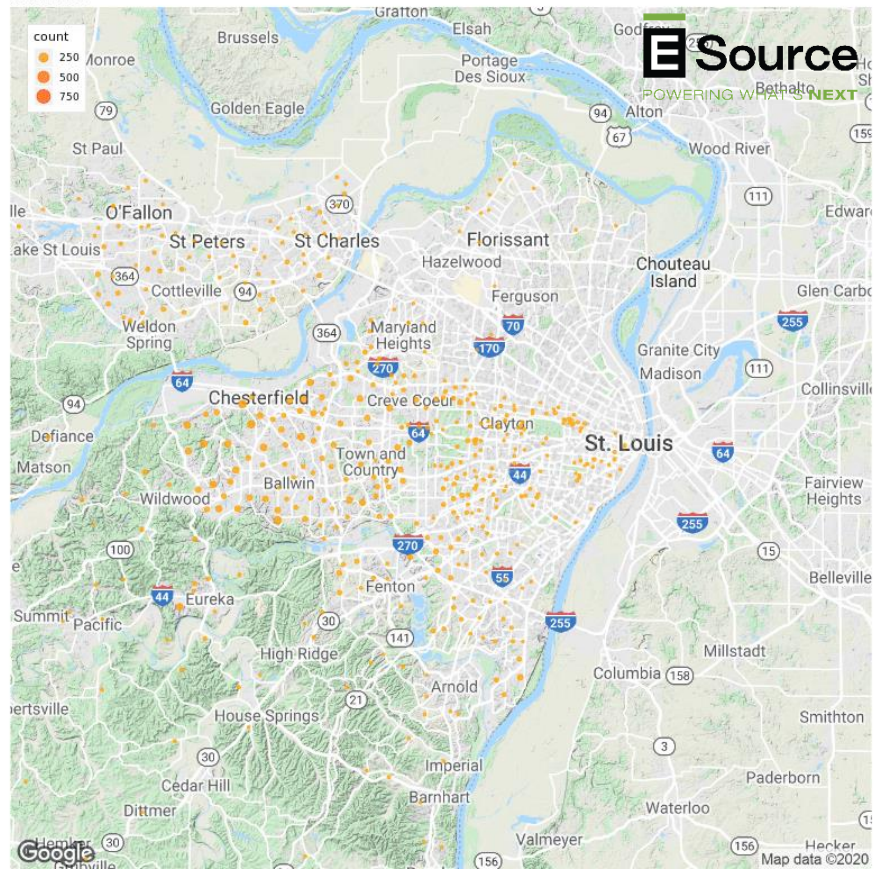
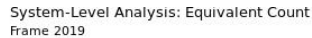


Source: Lauren Lynch, NREL, <https://www.nrel.gov/docs/fy20osti/74538.pdf>

- Private network operators such as EV service providers (EVSPs) have their own site-selection processes
- Municipalities have some guidance on siting, but may be somewhat dated
- Standardized criteria and guidance for siting EVSE for different applications and use cases are needed to support scale

EV Forecasting

- Identified hotspots to support grid investment
- Targeted feeders for Non-Wires Alternatives
- Located areas with highest predicted utilization of charger infrastructure



What Future Are We Planning For?



Data

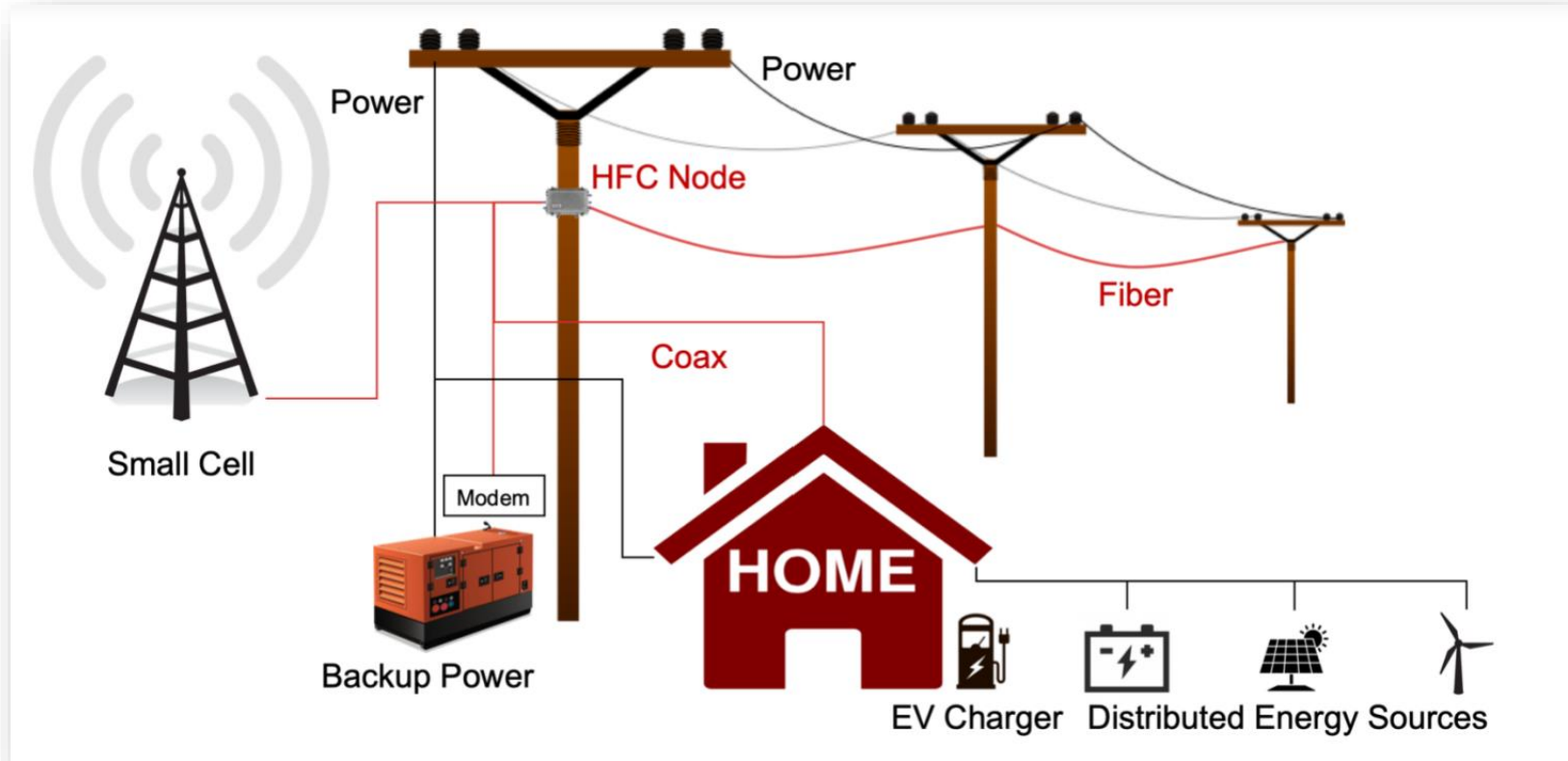
A blurred background image showing a person from behind, looking at a tablet. The tablet screen displays a colorful bar chart with green, blue, and red bars. The person is wearing a dark jacket. The overall scene is out of focus, emphasizing the data on the screen.







Infrastructure Convergence



CableLabs: Gridmetrics White Paper by CableLabs® and Gridmetrics™ and <https://gridmetrics.io>

Equity



TE Equity

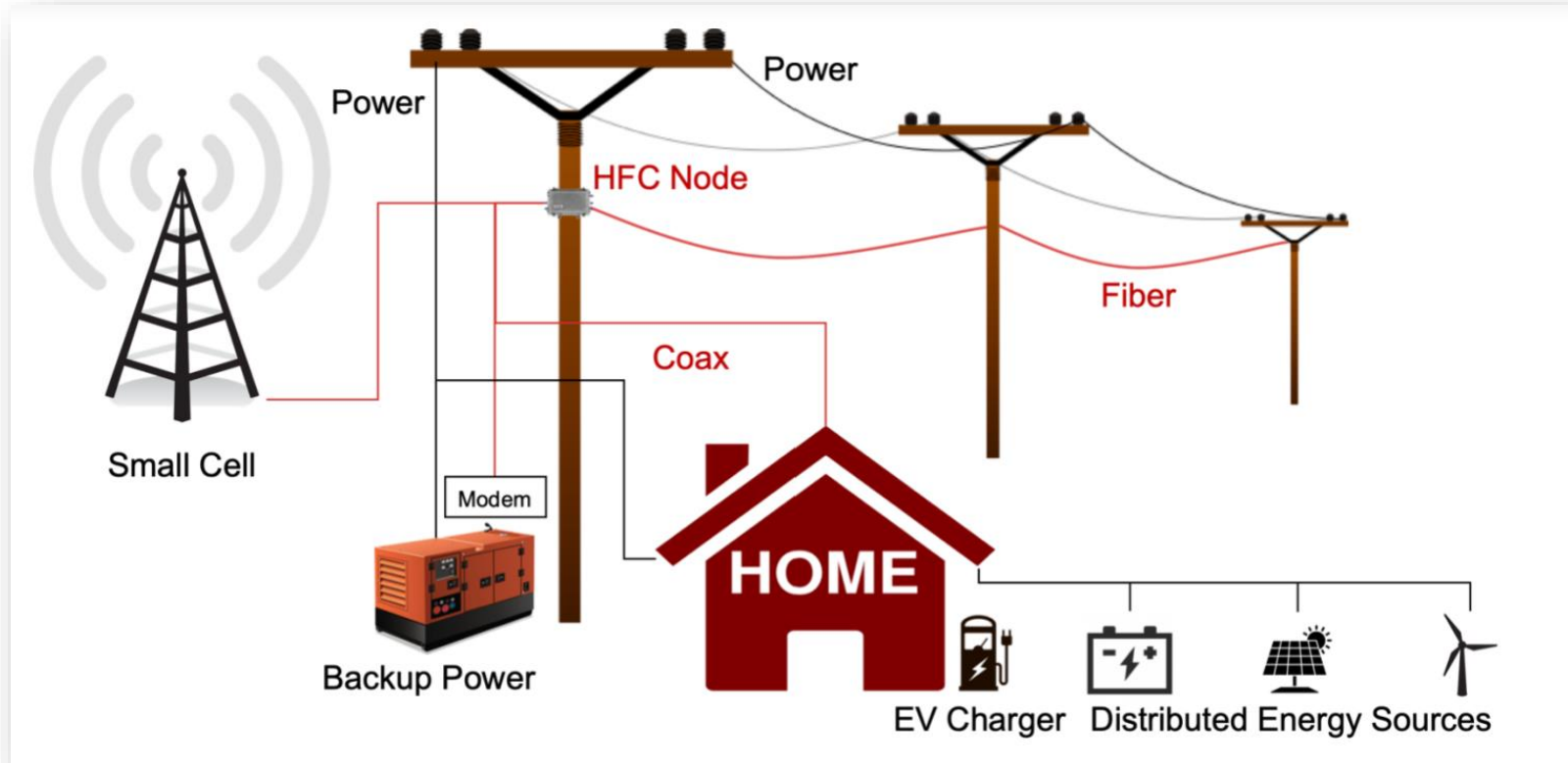
- Incentives, tax credits, rebates, etc.
- More funding won't solve TE equity challenges
 - Readiness to buy an EV
 - Inability to charge EV at home
 - Perceived influence of charger availability
 - Needs aren't met by existing programs
 - Etc.



TE & Smart Cities



Infrastructure Convergence



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