



Keynote Address

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#WeTheStates



EV Charging: Clean Charge Network

Chuck Caisley

Chief Customer Officer





Time Magazine



This City May Soon Be the Best Place to Own an Electric Car

A huge plan is in the works to juice electric vehicle adoption.

TIME.COM



Clean Charge Network (CCN)



- Launched in January of 2015
- Planned 2,2000+ Level 2 charger ports plus 20+ DC Fast Chargers
- Focus on publicly accessible, high population density / long dwell time areas, workplaces and geographic dispersion
- Establish one standard communications and payment platform
- Installed as utility infrastructure
- Currently the largest installed and operating utility-owned EV network in the US

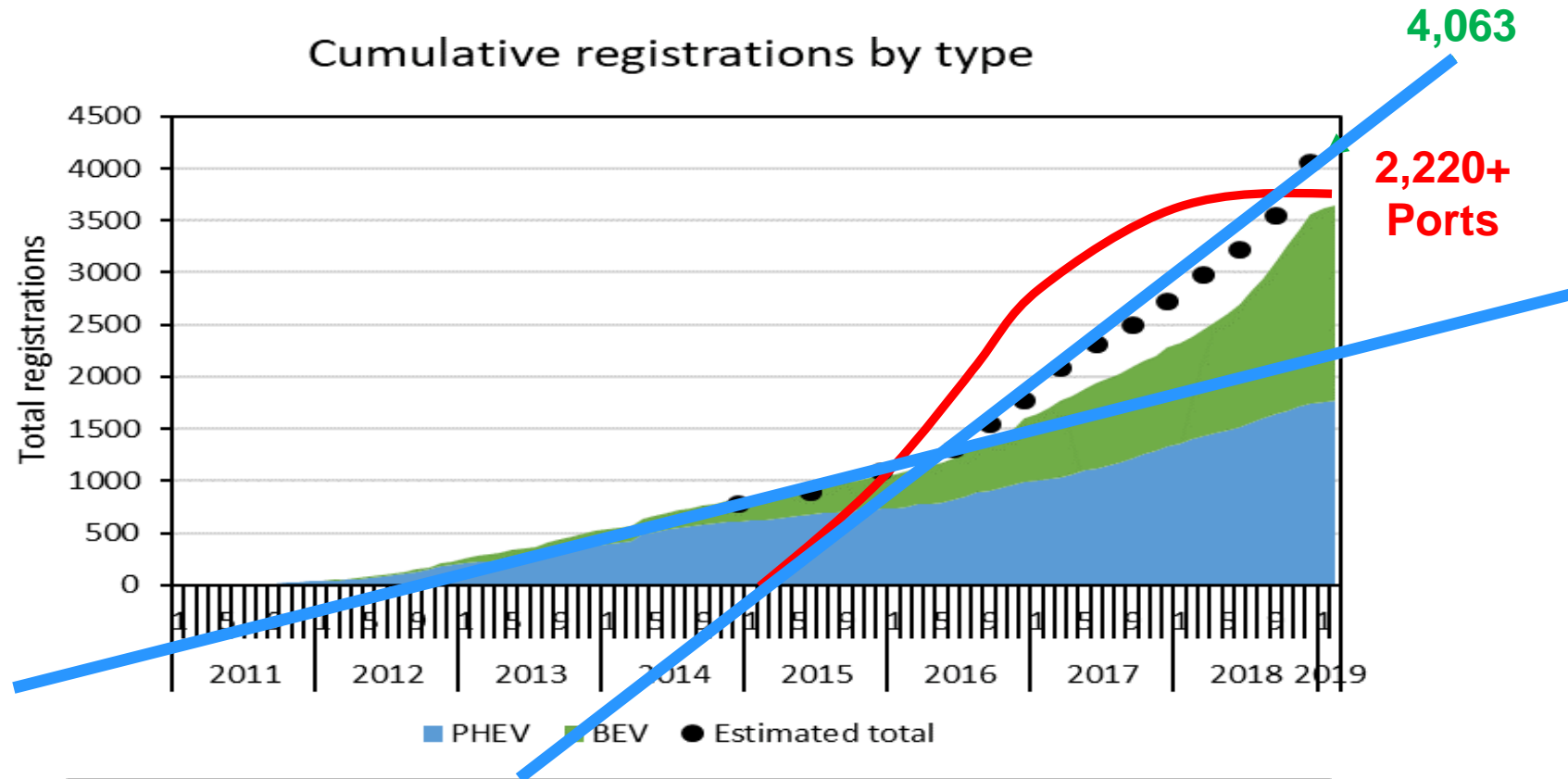


CCN Goals

- **If you build it, they will come: Eliminate range anxiety**
 - Increase EV adoption rate
 - Support drivers without dedicated home charging
 - Enable long-distance travel
- **Grow EV adoption**
 - Educate customers
 - Drives economic and environmental benefits
 - Provides for stabilized rates for all customers
- **Real data: Understand and influence grid impacts**
 - Integrate with the utility grid
 - Analyze charging models/load shapes
 - Explore managed charging opportunities
- **Develop customer solutions: Strategic/Beneficial Growth**



KCP&L EV Adoption



The PHEV and BEV wedges represent cumulative registrations, while the black dot represents the total vehicles estimated to be in operation. They will differ due to vehicles that leave the fleet due to crashes and sales of used cars into and out of a region.

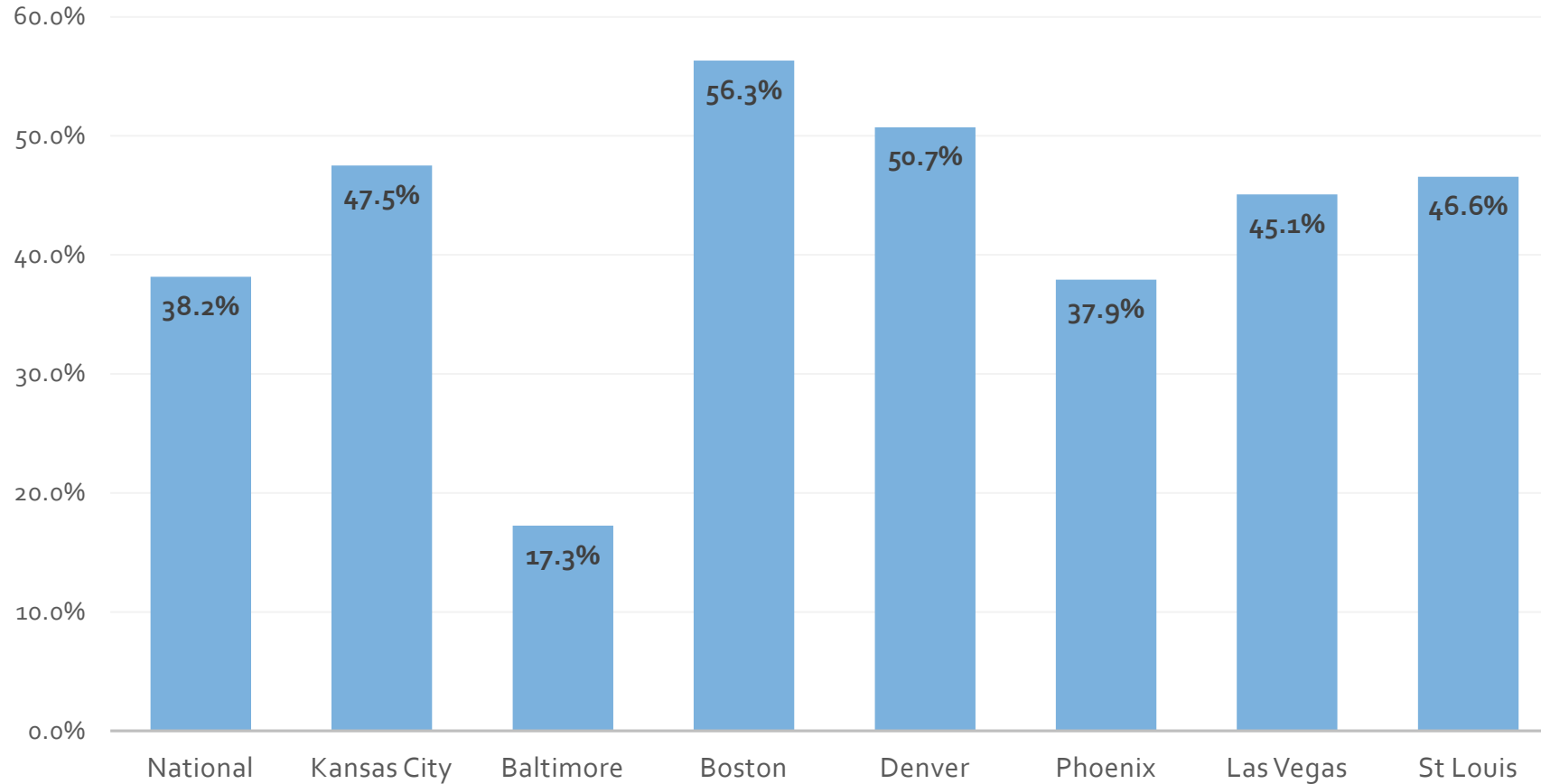
Source: EPRI KCP&L Vehicle Registrations February 2019



Year Over Year Sales Growth

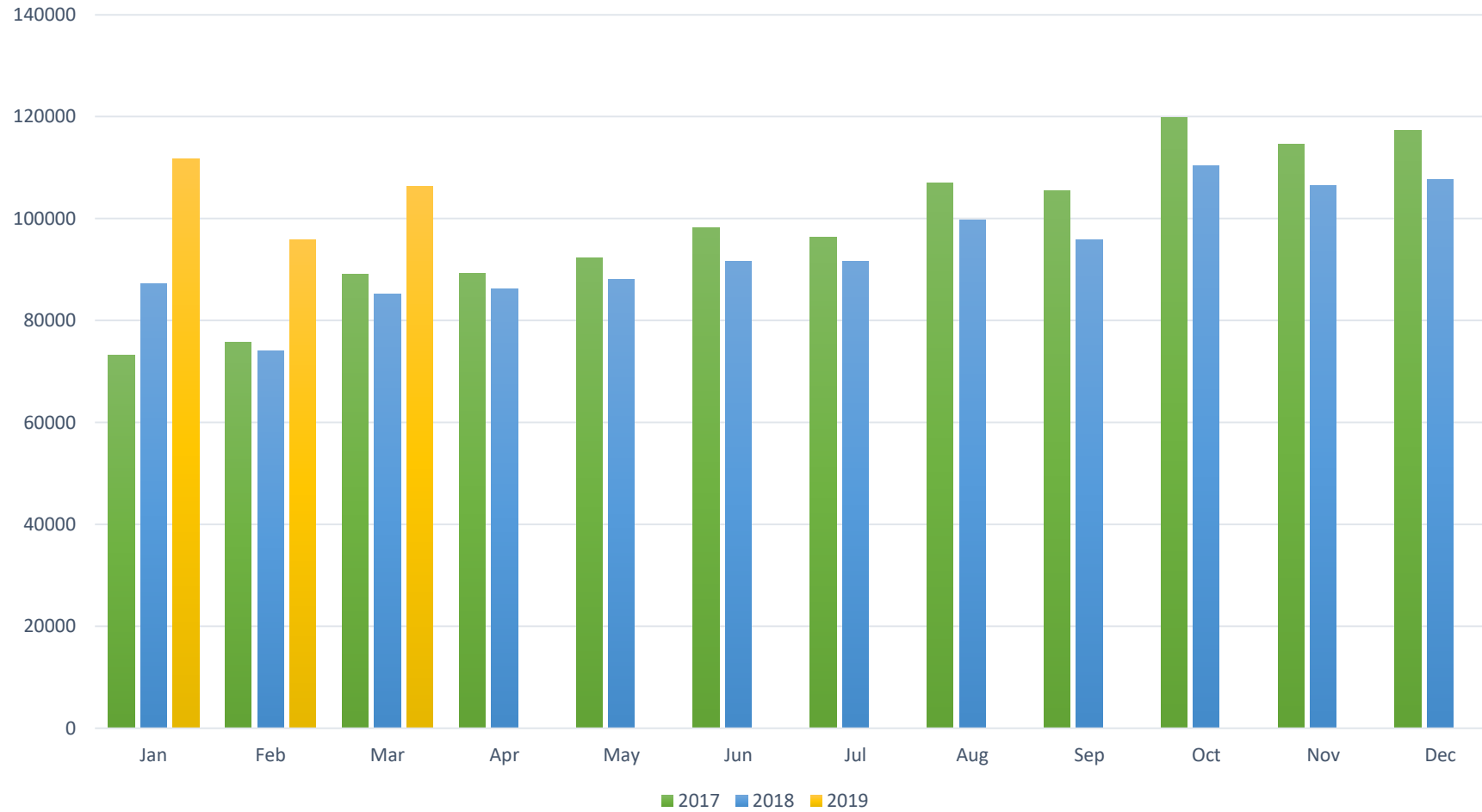
**CAGR 2015-
2019: 70% +**

YOY EV Sales Growth – 2017 to 2018

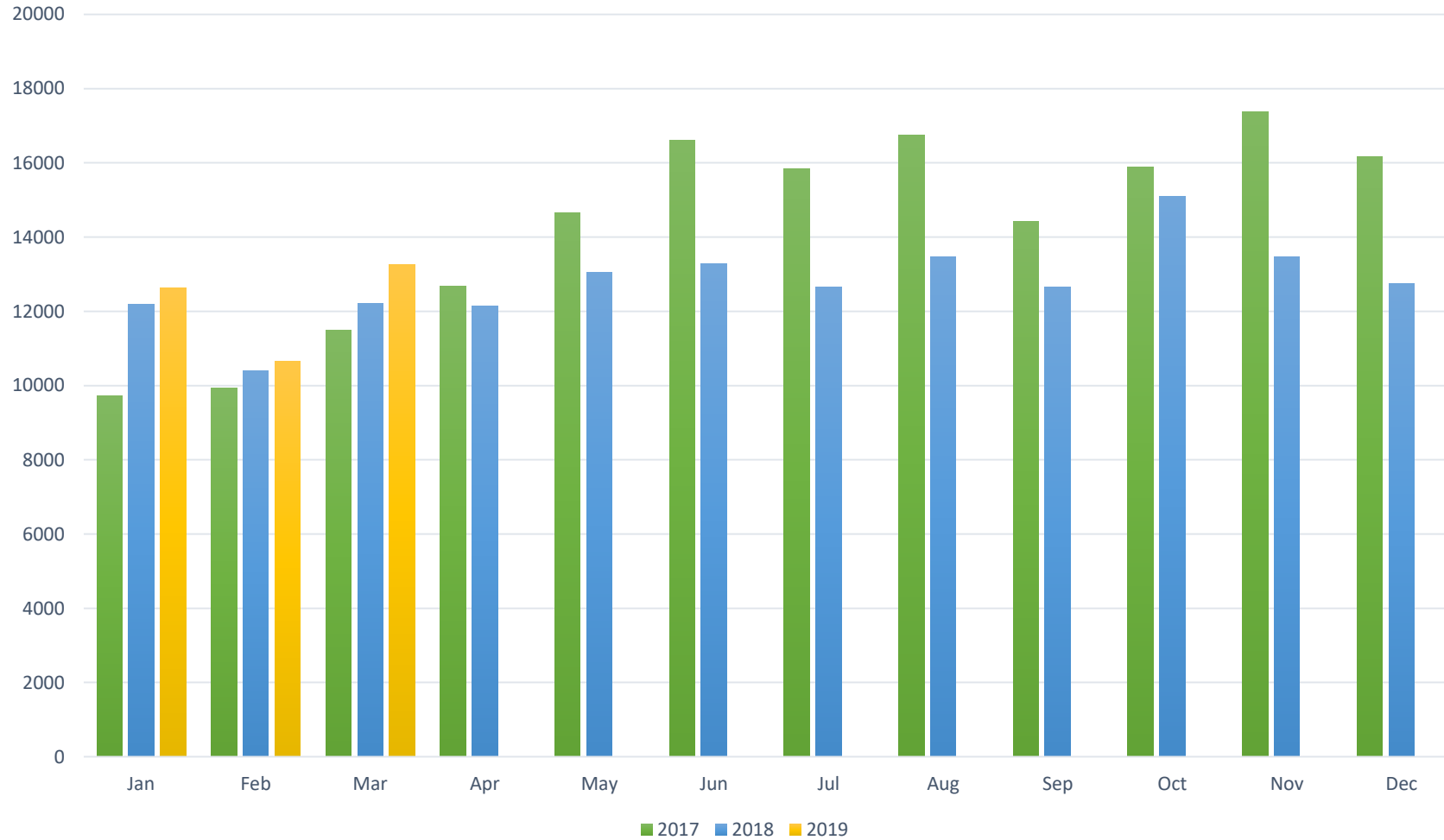


Energy Usage

Kilowatt Hours



Charging Sessions Per Month





Impact of CCN Environmental Benefits

Environment

Lifetime

Here's how EV charging has helped:



You've avoided
1,414,722 kg
greenhouse gas
emissions



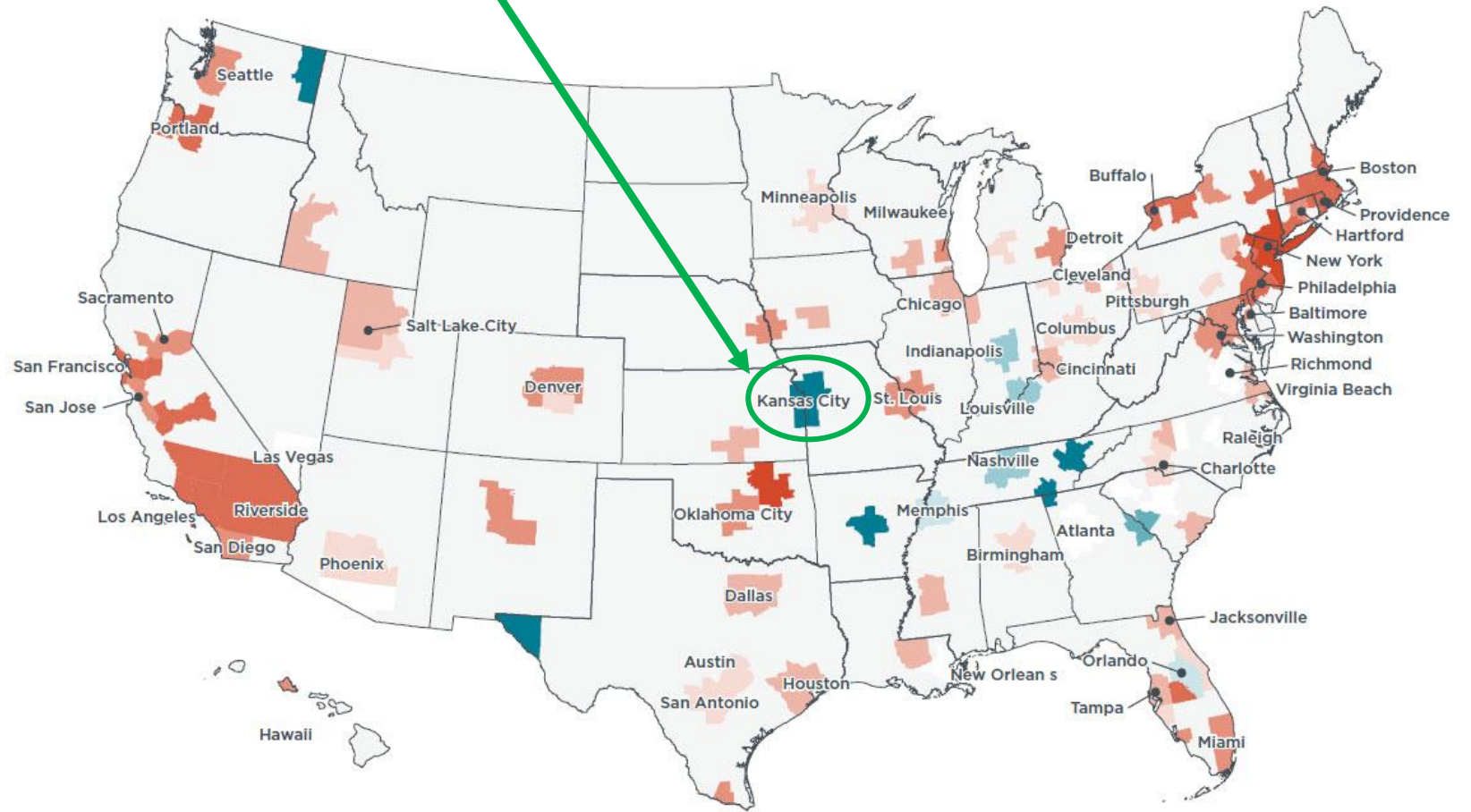
that's like
planting
36,275
trees
and letting them
grow for 10 years

Source: ChargePoint Dashboard





KC Metro: #1 in the Top Thirty Metros



Charging infrastructure in 2017 as a percentage of that needed by 2025



Figure ES-1. Public and workplace charging infrastructure in place in 2017 as a percentage of infrastructure needed by 2025 by metropolitan area



The KCP&L Corporate Jet



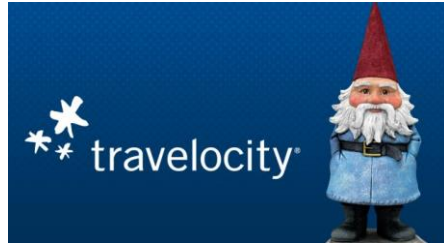


If Airlines Were Run Like the Electrical Grid





EV's Are the Priceline of the Grid

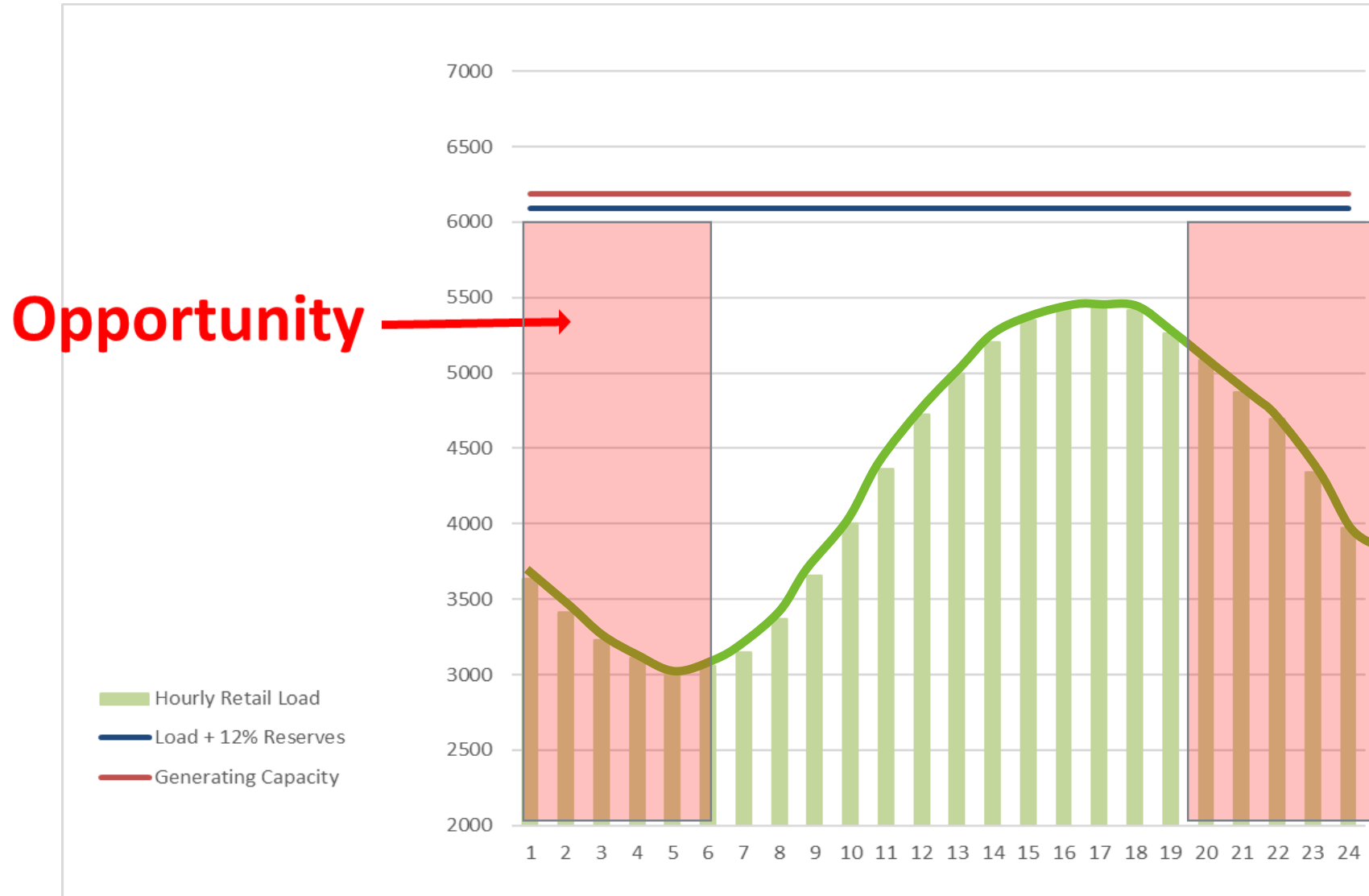


Mandates & Aging Grid:  Costs

kWh's: Solar & EE  Electric Vehicles 

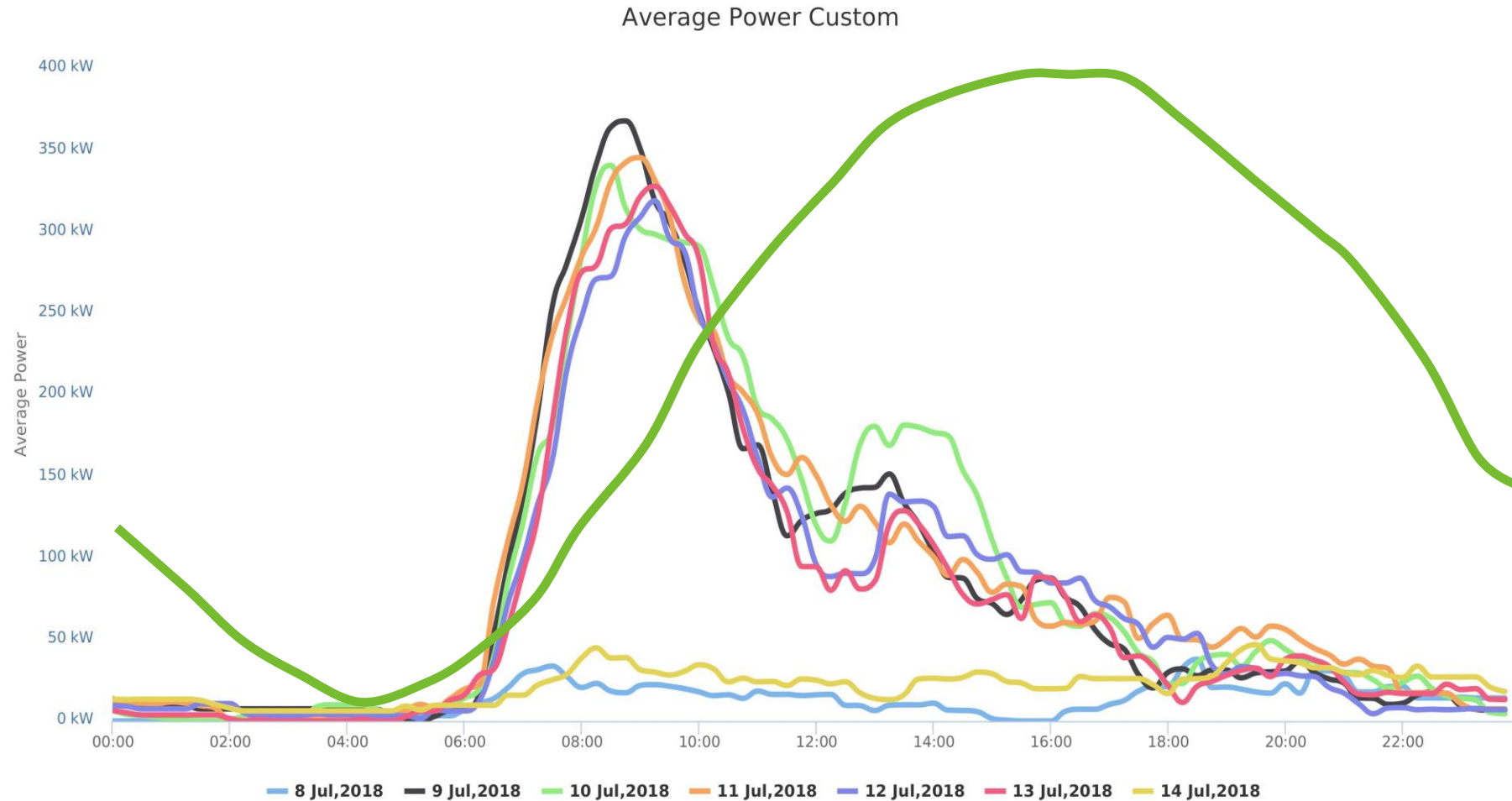


Grid Optimization Opportunity



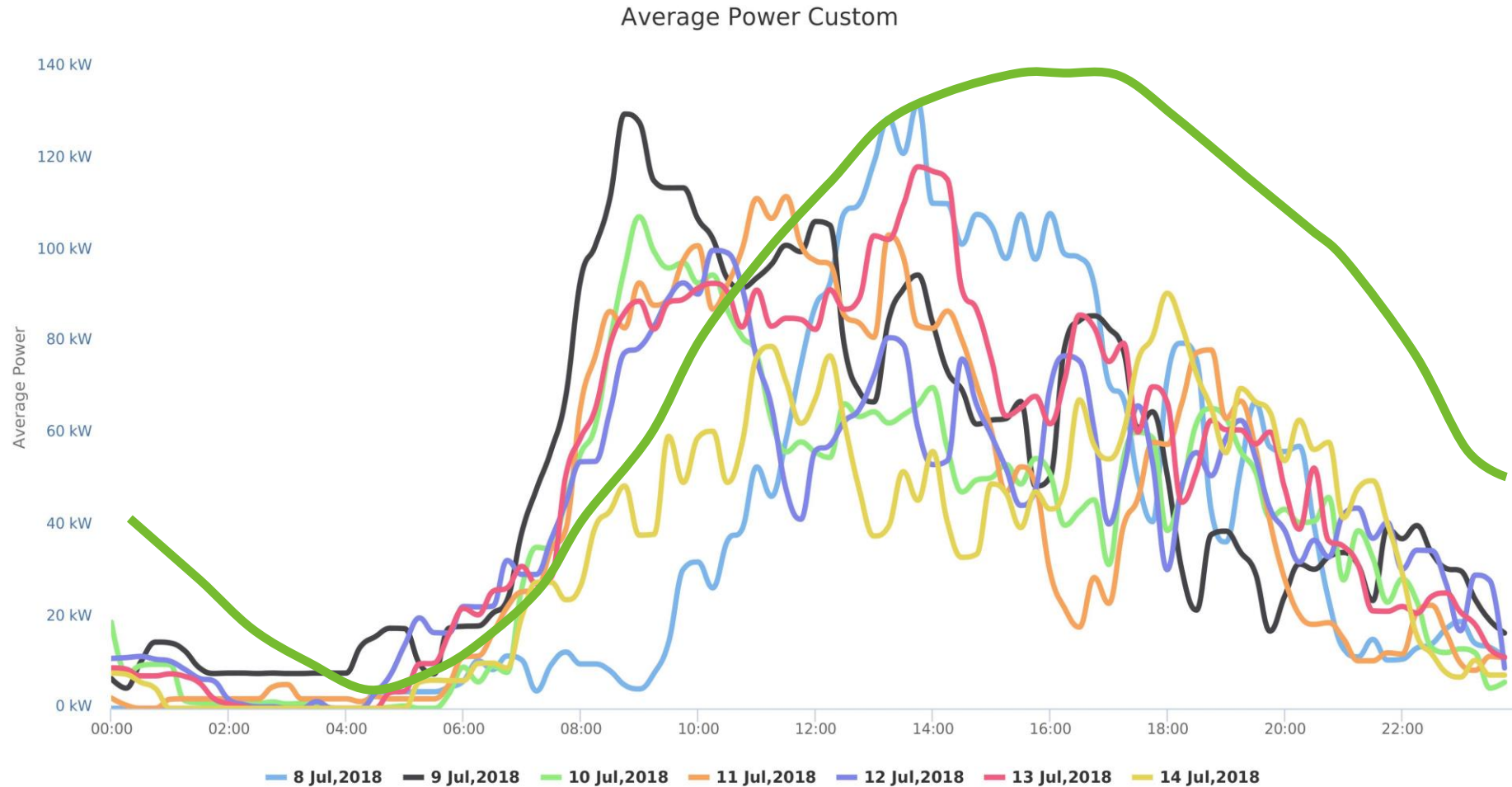


Workplace Charging Load Shape



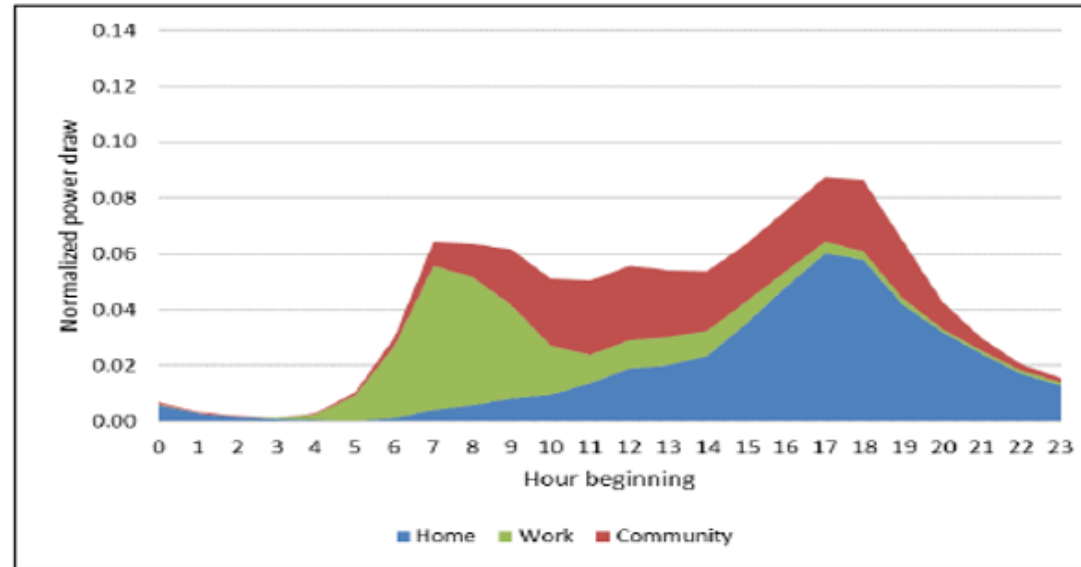


Retail Charging Load Shape

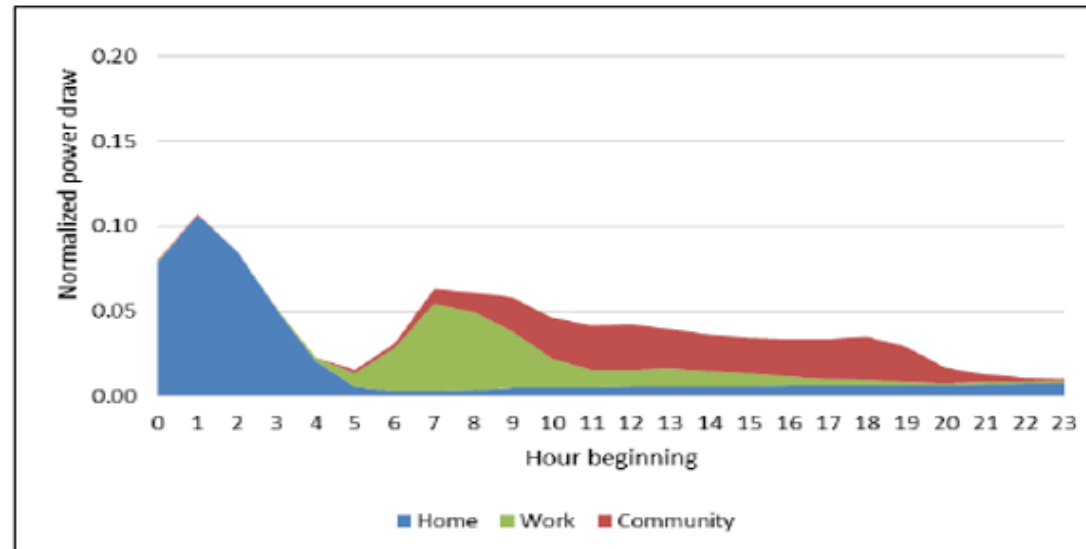




Influencing Charging Pattern



Unmanaged



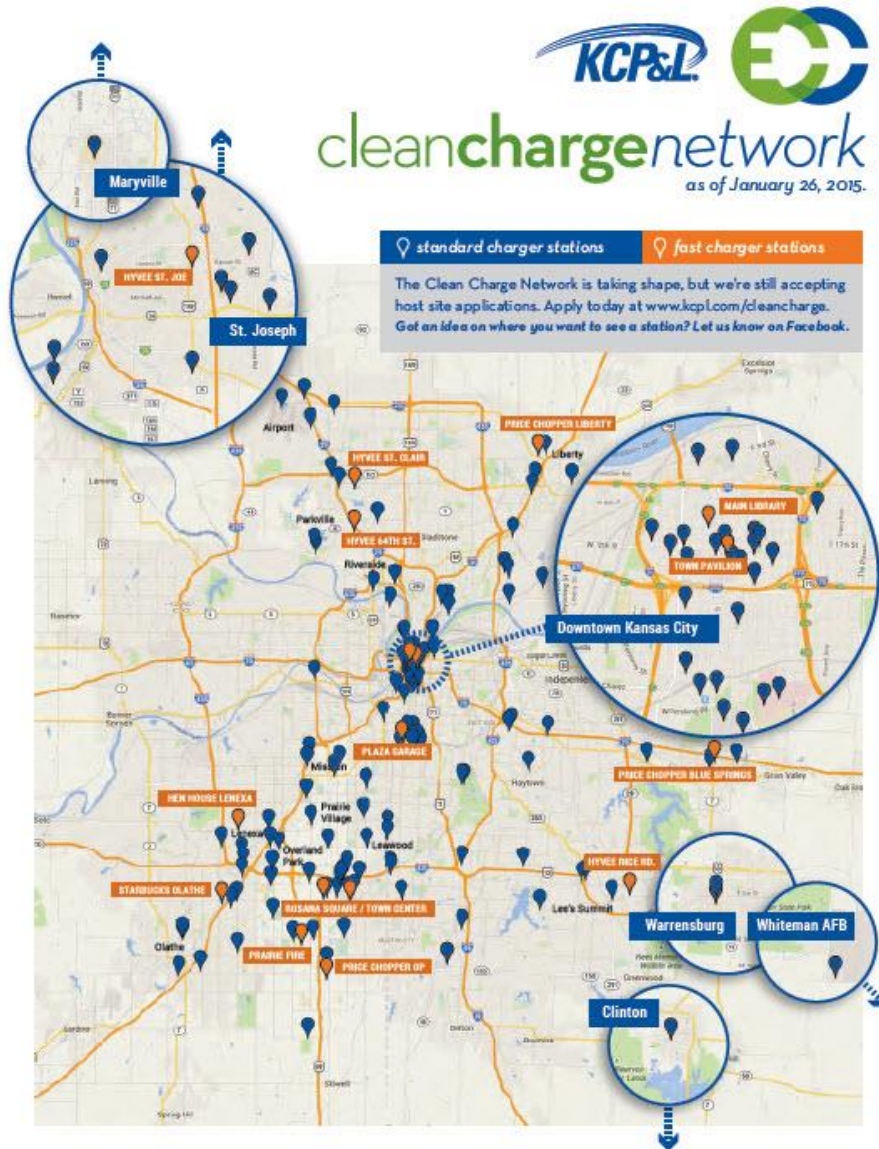
Managed

Source: EPRI Ph 2 Analysis





Clean Charge Network (CCN) Benefits



Smart Electrification

Improved Environment

Economic Development

Customer Programs

Utility Cost and Infrastructure Advantages

Proactive Policymaking