

UIC Workshops on Beneficial Electrification of Transportation

2nd UIC EV Workshop on
Transportation Electrification Infrastructure - Technology, Installation & Ownership
https://go.uic.edu/UICEVWORKSHOP_BREAKOUT

COMPILED NOTES FROM VIRTUAL BREAKOUT SESSIONS

June 22 - Residential and Multi-unit Dwellings – with and without Dedicated Parking

CHALLENGES

- Rentals - lack of communication, what can be done for property, right to charge laws
- Multi-unit dwellings - owner needs to get permission, condos need board approval / right to install - Who? How?
- Space challenges - cost for designing for currently designed cars - EVs can be designed differently than conventional car which expands options by addressing different sizes
- Use of electricity - less incentive for landlords to electrify by landlords since they don't get the benefit
- Permitting processes, delays for getting permits in hand
- Retrofitting existing buildings, getting power to location
- Electric grid loading aspects - residential areas are not built as robustly as commercial areas
- Multi-family w/o dedicated parking - need local ways to address charging optimization and scheduling
- Construction challenges - unique to residential, installing chargers can involve additional cost and construction for infrastructure
- Purchasing a charger - compatibility, where to purchase, education
- Education for building owners etc. - how to provide information for consideration
- Dealership - lack of education and not selling EV's, dealership disconnect, policy, OEMs, - customers connected to utility at purchases

RESOURCES

- Atlas EV Hub - utility pilot programs to look at
- Smart infrastructure for Multi-family that can be shared - optimization, off peak, etc.
- Dealers and EV innovators - what they can offer for specific use cases
- EV Charging providers - what they offer
- Utility and pilot programs targeting for multi-family sites
 - o some have been more successful
 - o program design
 - o utility and regulatory context
- Municipalities - EV Ready policies, success and lessons learned
- EV Drivers - right coalitions to inform/educate others - urban/rural, dealers to go to, local meetup groups etc.,
- EVHybridNoire / Forth → Equity
- CMAQ - difficult programs to get funding but it's their mission
- Street parking - equity, neighborhoods, condo vs apt buildings, public parking is a resource
- Under-utilized parking
- Proximity to existing electrical infrastructure
- Under-utilized road width

For more information about the UIC EV Workshops, please contact the organizer, Dr. Elizabeth A. Kócs at ekocs@uic.edu or 708.267.4097.

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OPPORTUNITIES

- Congestion, pollution and collision mitigation encourage updates to building codes - EV Ready
- Educate auto dealers to promote EV to customers, link to utilities and charging providers, to help customers optimize charging infrastructure Essential worker, physical distance
- Electric utilities - charging infrastructure to be deployed, utility incentives, managing load at grid level and multifamily sites
- Public streets and parking Installation of dedicated charging not always possible - DC fast may be better
- Ensuring public transit and ride share charging
- Private streets, parking, and parking Infrastructure
 - o optimization for usage
 - o peer to peer system - EV owners
- Use of renewable energy (solar on roofs) for Individuals and companies - multi ways to power the cars
- More people know the better - auto dealers, customer education, property owner education
- Availability of EVs
- Policy - CEJA - influence policy to carve out well-structured plan
 - o policy and policy formation
 - o stakeholder perspectives
- Public private partnerships - collaborations, incentives. discounts, to help facilitate charging deployment and education
- Technology - dedicated chargers per space may not be ideal - robots that come to car to charge
- EV range and price concerns - marketing that addresses this as sometimes chargers are not needed since most use overnight charging

SYNERIGES & PATHWAYS

- Different modalities, sizes of EVs
- Laying out opportunities for EV owners etc.
- Outlining of utility pilot programs for IL
 - o Look at the topic in the subset and identify consistencies
 - o Most cost effective utility pilots - finding ways to replicate the projects
 - o Designing pilots for multifamily - most challenging - needs more attention
 - o Georgia case study - EV sales, equity lessons learned - not just cost, if goal is deployment - access - stronger utility role is better
 - o SDGE - pilot program --> equity
 - o SCE --> make ready had minimal uptake
 - o Cost for customers to charge etc. , simplify billing
 - o Synergy of e-mobility - people and goods – PPP
 - o Utilities can be leaders
- What is the role of the state itself?
 - o Statewide information campaign policy - CEJA, ZEV state - mandate to sell X number of EVs
 - o Trickle down impact of ZEV --> Minnesota
 - o Credits, economic reasons-> missed opportunity is innovation Education, incentives, EV Sales

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STAKEHOLDERS

- essential worker, business owner utilities, charging provider, auto dealers, communities, EV owners

EQUITY

- Engage community - equity, location, context, input/feedback everyone's interest to move quickly to facilitate transformation

CONSENSUS

- a variety of approaches should be utilized
- a variety of charging and network providers should be utilized
- territory wide - varies / utility engagement may vary depending on task & location
- Engage community - equity, location, context, input/feedback

June 23- Workplace, Community and Destination Charging

CHALLENGES

- Community struggle - planning is not there
- not used as frequently as thought infrastructure is not always available
- Capacity upgrades may be needed permit considerations
- Scheduling/coordinating availability cost recovery
- Sharing
- Distribution of chargers
- Payment
- Workplace
 - o Installation costs vary widely, need to help customers understand
 - o Campus settings
- Destination
 - o Justification & utilization rates
 - o Greenwashing
 - o Rate structure, demand charges

RESOURCES

- Customers/Rate payers & Utilities have greatest benefit from EV adoption
- CA - deployed pilot projects on community, workplace, destination
- Public policy - Atlas EV Hub - great resource
- Databases on public charging stations - Proshare, Charge up
- 24 charging operators in US - some are real time
- NREL, Plugshare
- Privately owned L2 charging stations by homeowners
- Community resource condo bldgs. - L2 shared
- L2 rebates from utilities
- Sharing privately owned infrastructure
- Leveraging sharing economy -
- Local environmental groups to identify locations in communities
- Availability of real time information - sharing across vendors
- Access to information

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- Streamlining permitting / installation process
- CA - permitting guidebook

OPPORTUNITIES

- Scheduling / Real time
- Leverage privately owned
- Smart technology --> L2 residential to collect data for future applications
- Locations to leverage greater usage
- Unlock future opportunities
- Encourage EVs and EV Charging
 - o helps keep rates low in the future
- EV Readiness Ordinance
 - o need state level policies to support EV adoption
 - o municipal ordinances too
- Placing charging stations near other mobility options
 - o options for alternates
 - o unlock future opportunities

SYNERGIES AND PATHWAYS

- Co-location of charging stations
- PPP - municipalities - TIF funds - spur econ growth
- PPP - collaborations - Consumer education & awareness
- EV charging, TOU rates, community charging --> tie to energy assessments
- How budget & funds can best support across programs

STAKEHOLDERS

- utilities
- dealers, municipalities, consumers
- job growth - EE, EV, contractor, etc.

June 24- Public DC fast charging Infrastructure for specific use cases, i.e., TNCs, corridors, long-distance

CHALLENGES

- 300 ports in 85 locations in IL in Feb 2020
 - o 64% were Tesla supercharges
 - o Tesla and everyone else - obstacle for non-Tesla drivers
- Cost
 - o complexity and not compatible
 - o optimal location / maximize impact RE: air quality
 - o Rate design, demand charges, low utilization sites
 - o Utilization rates are very low (data shows) - revenue doesn't cover costs
 - o Need subsidies to cover costs
 - o Economics not there - infrastructure is not always the highest cost
 - o Managing load, dynamically, in a fast charging context
 - o Alleviate range anxiety

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- Climate
 - o Winters and summers – impact
 - o Trade off study
 - Location vs utilization, charging type, etc.
 - Complex trade off study to analyze location
 - o Stakeholders not working together - needs to be developed
- Load
 - o Future dynamic pricing to nudge behaviors drivers are sensitive to price!!
 - o Regardless of type of vehicles customers can be very responsive to dynamic pricing
 - o Customer experience at L2 more likely
 - o Making sure to reach communities that have seen disinvestment
 - o Customer experience is important to consider beyond prices
- Technology
 - o how to best leverage Inclusion of RE with public charging stations

RESOURCES

- FUNDS
 - o VW settlements, capital bill
 - o Public Policies
 - o ZEV mandates -favorable bylaws, ordinances
- Utilities
 - o How they can be leveraged
 - o Different approaches
 - o Work with EV charging providers
 - o Induced effects on EV adoption
 - o Benefits for rate payers, utilities, etc.
 - o Collaborative approach - Make Ready
 - o Competitive approach
 - o Capacity maps
- Companies' statement on climate
 - o Drive changes
 - o Electricity fleets
- Auto Manufactures
 - o Rivian
- Organizations
 - o CMAP, Others
 - o Work with municipalities, others
- Challenge for utilities or cities to understand DC Fast chargers to plan networks and define policies b/c many charging operators

OPPORTUNITIES

- Reduce range anxiety through EV adoption
- Model availability, consumer education/awareness
- Utilities
 - o EVs are new type of load and customer engagement
 - o Leverage this new relationship

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- Also, for auto manufacturers - relationship with drivers
- Convenience stores, other compatible business model opportunities
- Develop maps of identify EV charging station location to maximize impact to communities utilizing expertise across area - university, labs, etc.
- Policy & Regulatory Conversations
 - Availability in rural areas
 - Provides frameworks to encourage deployment of DC Fast charging
- TNCs - use cases are more favorable for DC fast charging & equity considerations
 - Software for data and managing loads
- TNC - target for EVs

SYNERGIES AND PATHWAYS

- ZEV MANDATE
- Utilities- cost benefits impact for IL
- V2G - utilities & regulatory - future aspects approval for certain types
- Creation EV charge stations increases EV adoption
- Links together, doesn't matter where to start
- Public health - collaboration across public and private sectors
- Cooperation between local govts and private sector
- PPP
- Partnerships - utilities / all need to be a part of the effort
- Utility filing - multiple pathways
- Public health - location of charging infrastructure - impact on community
- Equitable, air quality
- Enabling legislation that sets environmental goals to achieve electrification
- System capacity maps - reach out to utilities and leverage and build relationship

FURTHER THOUGHTS

- Legislation - addressing need to move forward
- Coordination among locations, geographies, investors, etc.
- Regional planning organization / broader coalition
- Mid Continent TE Collaborative

June 25 - Medium and heavy duty vehicles

CHALLENGES

- Timing infrastructure & vehicles
- Coordinating build out of EV infrastructure to meet needs of customers
- Under representation of this use case
- Availability of EV charging / lack of availability
- Lack of charging for trucks in convention centers
- Cost of installation and charging
- Load that these vehicles require
- Need to plan and design appropriate charging
 - full wholistic planning
 - facility constraints distribution capacity

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- Rate design - mitigating high demand charges
 - o economic barriers of underutilization --> rate design needed
- Mix of public & private
 - o Who pays for it?
- Not good coordination or knowledge on what is needed for infrastructure - Second phase of installation is more challenging than first phase
- Flow of vehicles in lots for charging purposes - no lots in some cases
- Interoperability of plugs - non compatible plugs

RESOURCES

- \$70M in state capital bill
- Grants from pending legislation - rebates for school bus fleets, transit buses
- Medium is different from heavy duty → look at each study for tech details
- VW settlement funds
- NACFE has resources
 - o EEI, APTA
 - o HOR, CALSTART - clean corridor initiative
 - 11 utilities sponsored this I-5 corridor study
 - o U Windsor Carbon Free corridor - Chicago to Montreal
 - o Midwest corridor study - GPI study on corridor charging
- Electric - Midwest Utilities - corridor potential, also filings & cost recovery, load planning
- Leverage learning from first movers - large commercial orgs, transit agencies

OPPORTUNITIES

- Grid modernization dockets
- Legislation pending - to drive market forward, copying CA electric truck plans
- CARB
- Local and municipal incentives
- Economic development (Rivian) - supply chain, software engineering, etc.
- Medium duty vehicles have lower cost of ownership than ICE
- Leveraging private EV charging networks, EVGo
- Leverage utility filings - to get cost recovery
- Incentives are helpful
- Reduce air pollution in disproportionately impacted communities, diesel trucks
- Local air quality benefits
- CTA Navy Pier depot, school buses impact comfort levels
- Navistar - similar opportunity
- Rivian – opportunity
- Amazon (100k), UPS (10k arrival EVs), others too
- Beneficial impact on consumers for beneficial TE
- Rate payers, large opportunity
- Clean Cities organization --> education / clean trucks program
- Rate Design - opportunity to impact cost of charging
- Leverage software to manage charging
- Real time opportunity for fleet owner and utility to combine managed charging software with load to reduce cost

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- Goal to have a make ready program for large facilities
- Sustainable goals of companies and municipalities
- ESG
- Have defined cycles and charging needs, opportunities to plan for making them ready

SYNERGIES AND PATHWAYS

- Roadmap exercise for state utility plan for TE infrastructure
- Clean Cities in IL - role to bridge gap
- Big picture - legislative process --> regulatory process
 - o Role for utilities
 - o Framework for ICC to consider utility filings
- Internal fleet commitments for med / heavy duty
 - o Exelon
- Health & Climate benefits

STAKEHOLDERS

- Communities - Don't forget rural, equity, Env Justice communities
- NGO's, nonprofits, OEMs, operators, networks, leasing companies, EV drivers, organization
- IL CUB
- Env Regulators
- Public health orgs
- Businesses, Chambers of Commerce

FURTHER THOUGHTS

- Where is the natural place to start deployment and transformation? And how to accelerate? How to get there as quickly as possible?
- Where is the money coming from, in light of COVID? How can we identify the money?
- What's going to happen legislatively to drive what will be able to happen in IL?
- What do they expect the mix of public vs private depot infrastructure to be?
- How do we prioritize the use of the finite resources?
- Given COVID and 2nd wave, what does the mix of M/HD vehicles need to be? Based on new societal norms?

June 26 - General session

CHALLENGES

- Demarcation for community charging for L2 vs slow DC fast awareness
- Education & outreach
- Driver behind legislation to spearhead efforts in IL
- Equity / Justice / Rural
- Access to and utilization of data

RESOURCES

- Utilities - funding, program styles, education
- Federal road surface re-authorization with EV charging - Larger infrastructure bill

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SYNERGIES AND PATHWAYS

- Legislative visioning & target setting → roadmap
- State to consider model for DC fast charging like MidAmerican in Iowa
- Hybrid approach - to spur development of DC fast charging
 - o Public Private Partnerships to drive adoption
- Municipal involvement - hybrid approach / PPP

OPPORTUNITIES

- EV charging - economic stimulus effort - fed, state, etc.
- Health impacts & air quality - strategic in design for public charging
- Public transportation
- Incentives to drive adoption → OEMs to promote EVs
- Utilities have key role to play → lead the charge
- Engage with customers

FURTHER THOUGHTS

- Planning is key!
- Work with utility → have conversation upfront
- Regulators set expectations without being too specific and should be flexible
 - o Portfolio approach to encourage utilities to try different things
 - o Ensure diligence to educate public which is critical to adoption - utility plays critical role
- Take a village to advance and all has a role to play to accelerate TE

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