

COMMUNITY CHARGING

A PEER-TO-PEER NETWORK OF ELECTRIC
VEHICLE CHARGERS FOR URBAN
RESIDENTIAL NEIGHBORHOODS

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E2 Fellow, 2018-19

Apartment Dweller/Used EV Owner



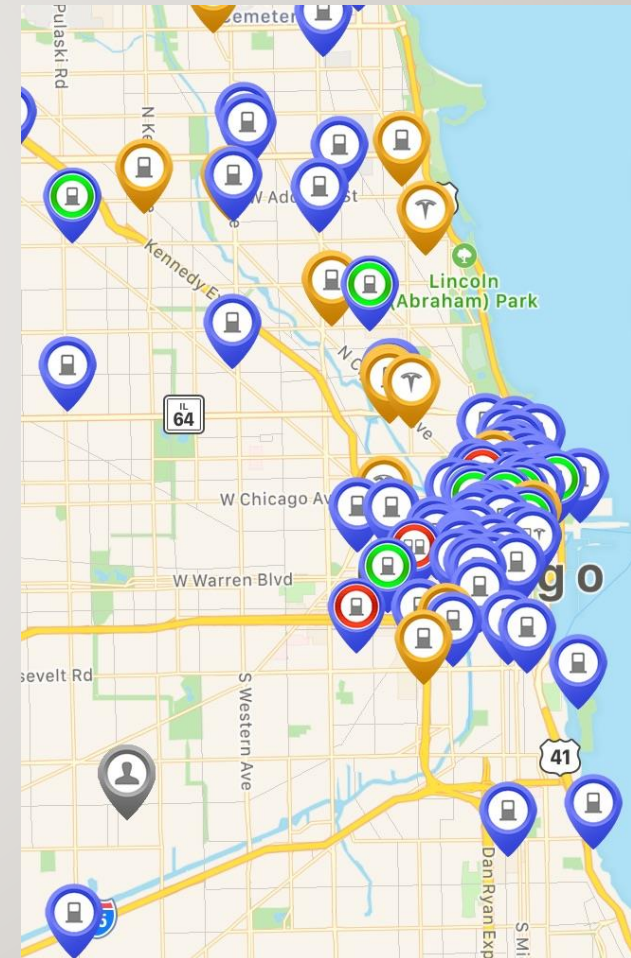
If electric vehicles are part of the solution...

- Electric vehicles (EVs) play a key role in decarbonization and clean air
- EV drivers don't have to pay for gas - huge cost savings over time
- EVs are cost-competitive, especially used, so why haven't they scaled in Chicago?

...then everyone needs access to charging!

Barriers to EVs in Chicago: Range anxiety

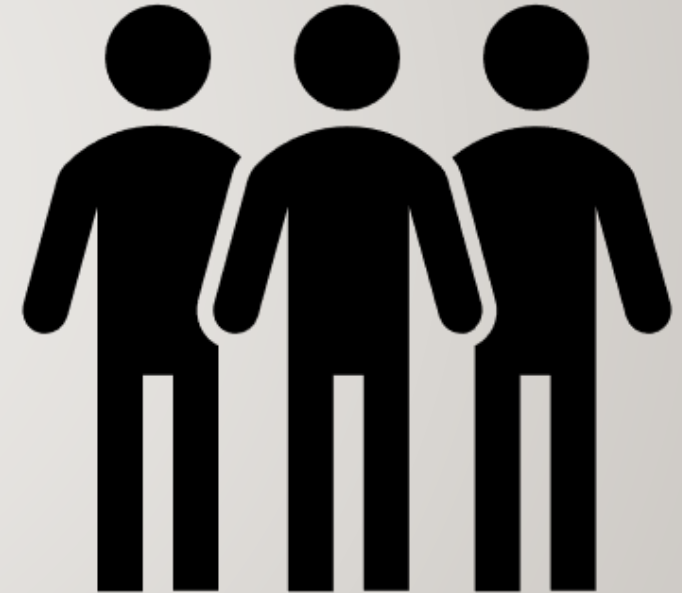
- Public charging distribution:
 - Chargers in expensive garages or Tesla only
 - Far from urban residential
- Prevents many communities from using/benefiting from EVs
 - Favors single-family/suburbs with a driveway
 - 70% Chicago multi-family and don't have garages
 - West/south neighborhoods - no public charging



PEER-TO-PEER SOLUTION

- We DO have charging infrastructure if we look a bit closer
- Businesses, churches, community centers, schools, and other local commercial entities WANT to support EVs

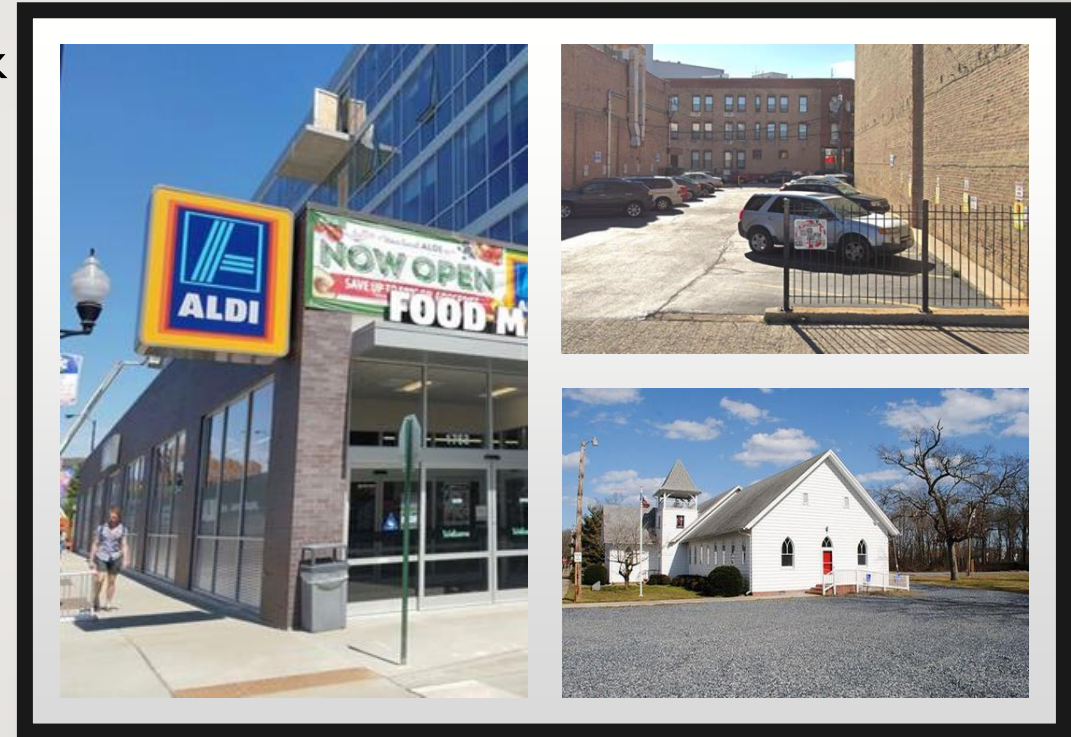
Parking + outlets + sharing economy
= **EV infrastructure**
= **Accelerated EV adoption!**



COMMUNITY CHARGING NETWORK FOR CHICAGO

Community chargers = peer-to-peer network of privately owned chargers that can be rented/reserved by EV drivers

- Passive income generation (“AirBnB” a charger)
- Affordable and accessible in any neighborhood
- Supports EV usage locally
- Attracts EV visitors - new customers!

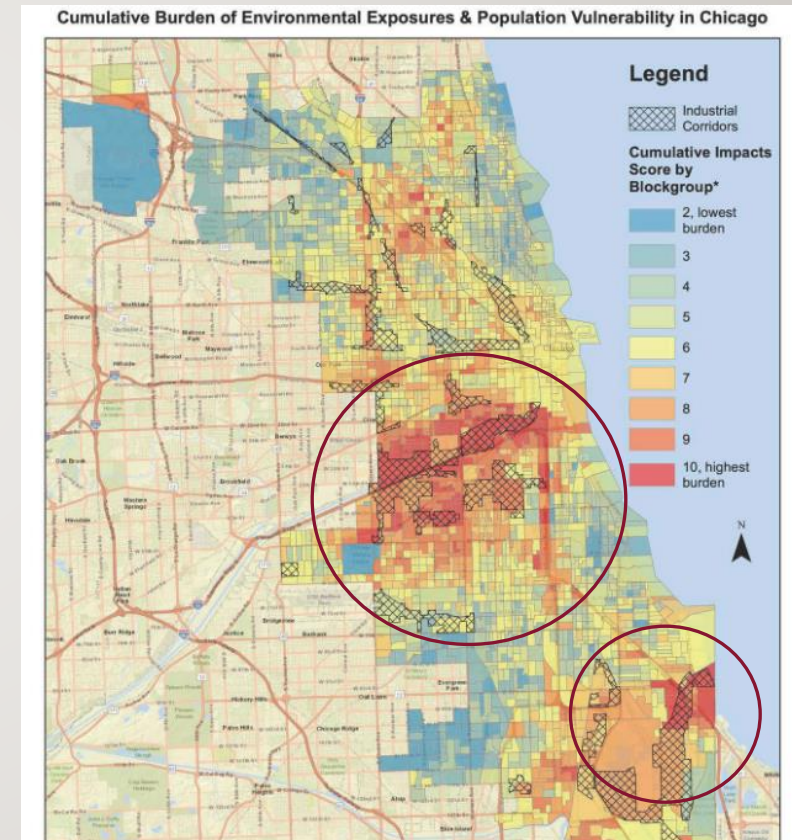


High potential charge station hosts – easy access parking at all hours, control panels near parking lot, wifi, signage, etc. makes for ideal peer-to-peer charge station hosting.

COMMUNITY CHARGING – FUTURE PROOFING

Empowering all communities in EV transition:

1. Building charging infrastructure in historically under-invested communities will limit the barriers of entry to clean transportation.
2. EVs are now **cheaper** to maintain and fuel than ICE cars. Affordable infrastructure for EVs, these communities can also access those benefits.



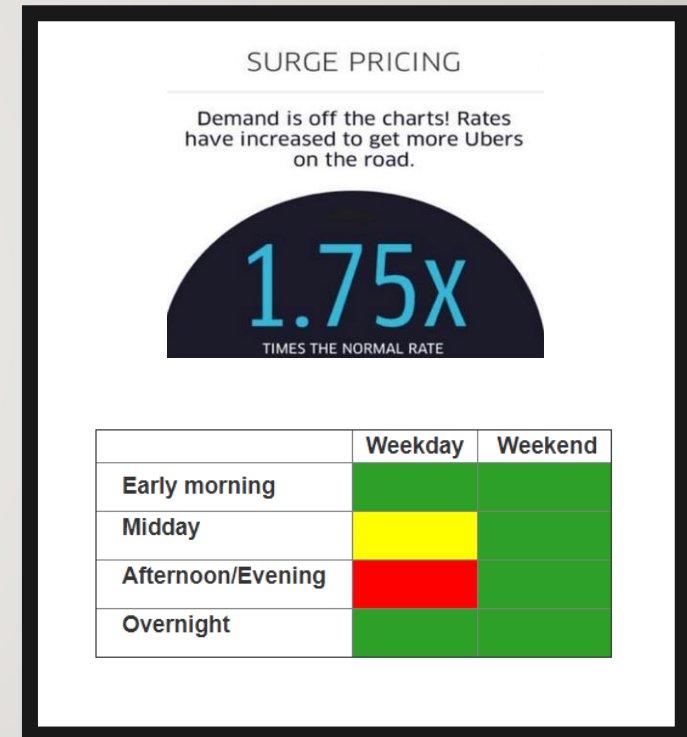
Map of Chicago and environmental exposure – air pollution from cars, trucks, industry and more (NRDC, 2018).

COMMUNITY CHARGING – DESIGN IT SMART

Empowering community partners to host a charger: [EVmatch App](#)

3. Covers host electricity costs + small profit reflective of utility rates

4. **Reservable** with access control to optimize usage in a sharing economy



Pricing can be based on popular charge times OR priced to encourage “green” charging behavior (overnight when wind is blowing!)

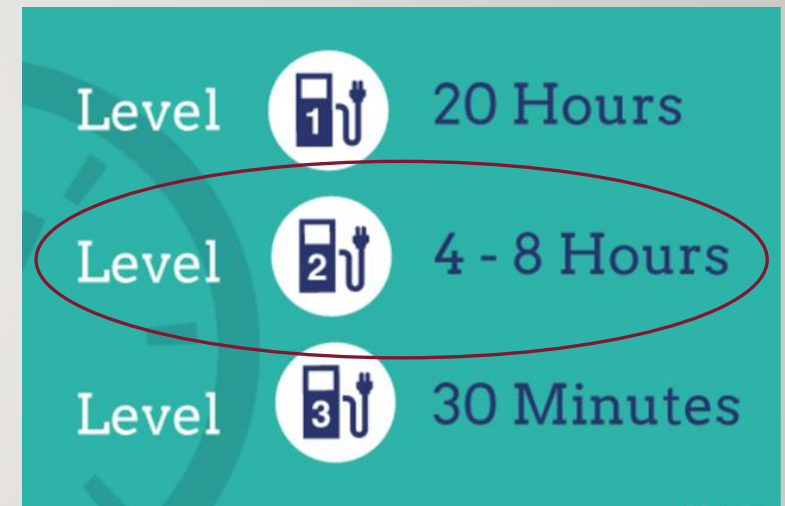
COMMUNITY CHARGING – DESIGN IT AFFORDABLE

Maximizing benefits of community EV charging:

5. Low cost for hosts and drivers and perfect for local driving patterns (1 hour = 30 miles of range)

Level 2 Smart Chargers (EnelX)

→ **Community Charging will help subsidize the cost of community chargers for hosts!**



Level 2 charging stations are ideal for community charging - connect to 240V outlets, 7.7-18kW draw, portable or standalone chargers, and under \$1,000 equipment (without installation).

CHICAGO SURVEY RESULTS – COMMERCIAL SITES

- Surveyed >20 commercial sites around Chicago neighborhoods in 2019
- Identified >10 host candidates

Sample questions:

“Got Parking?”

“Got Wifi?”

“Got panels near parking?”

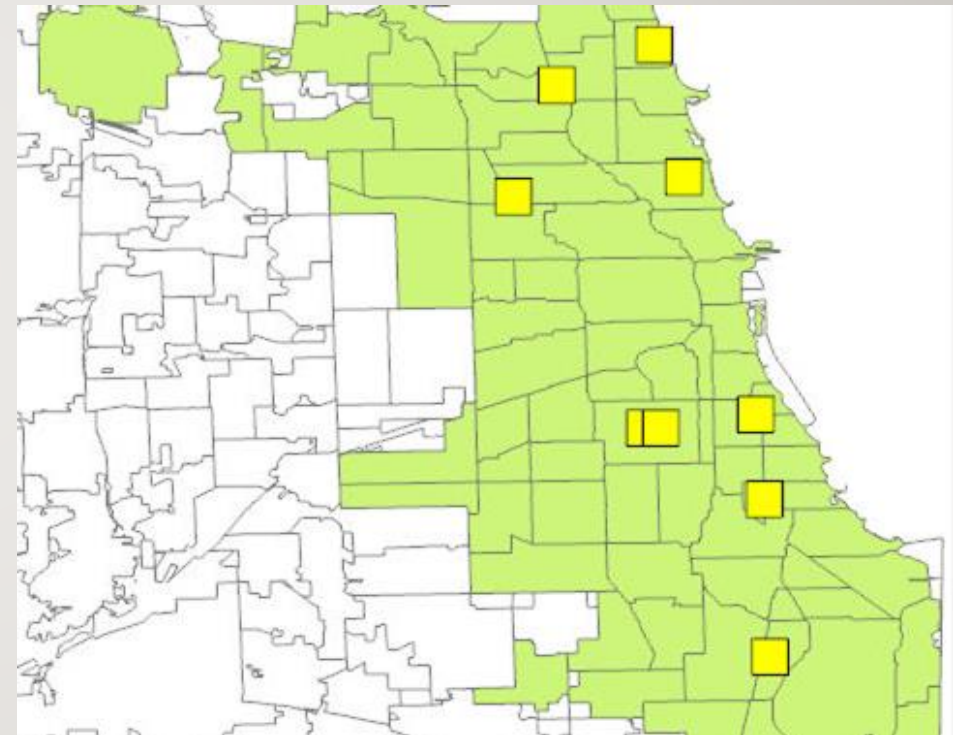
“Hours when parking not in use?”



If yes then...PRIME HOST CANDIDATE (installation <\$5k)!

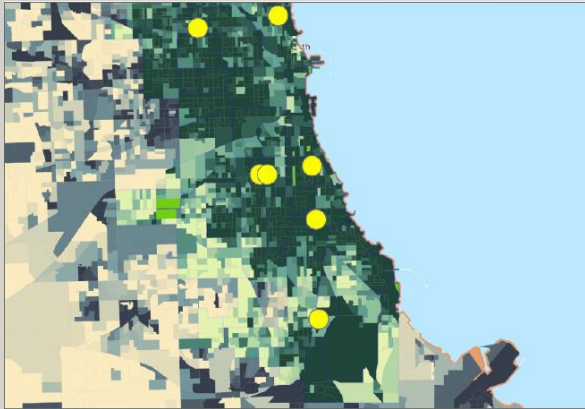
10 Prime Host Candidates (<\$5,000 installation)

- 10 potential community charging hosts have can install chargers for <\$5k
 - Small businesses
 - Houses of worship
 - Non-profit/community centers
- Want to encourage EVs in their neighborhoods
- Only nearby public chargers in garages (\$\$\$!)

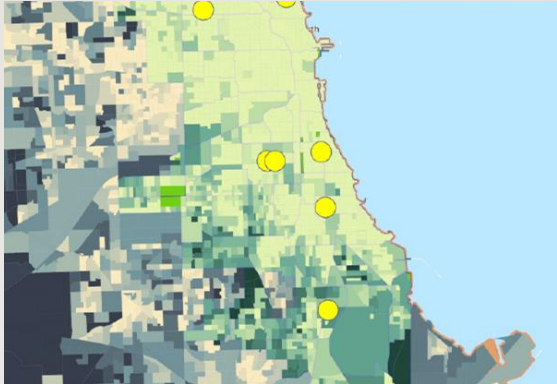


Identified site hosts represented by 1,741 Census block groups, 59 CMAP traffic study areas within half-mile radius. All installations cost <\$5,000 per charging station.

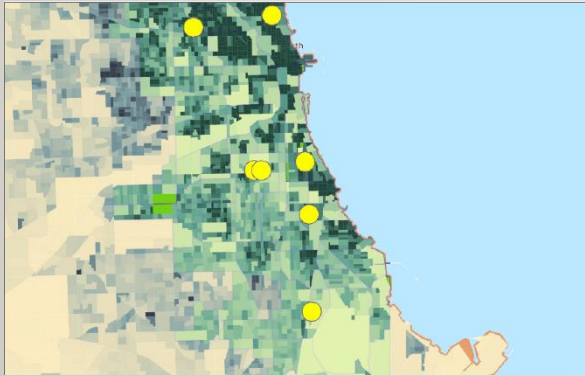
Prime Host Neighborhoods - GIS Snapshots



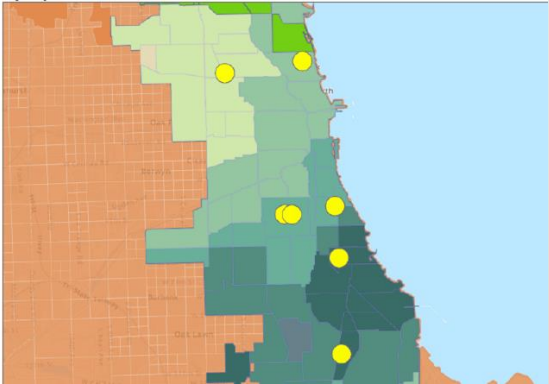
High % renters



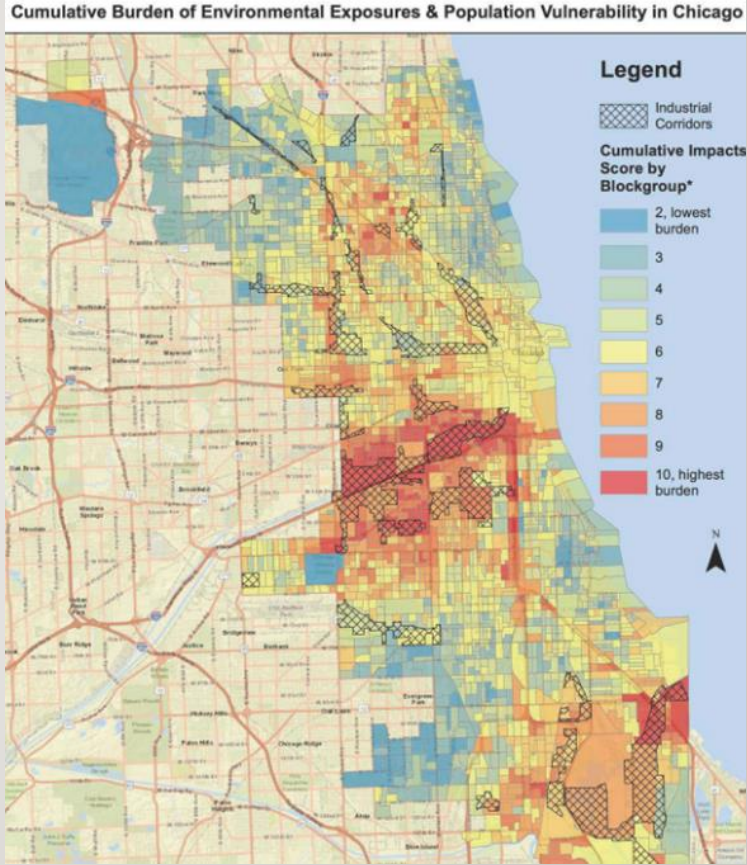
Tenants own cars



Household density varies



High ozone in zones



Cumulative environmental burden

ROADMAP TO A 501C3: COMMUNITY CHARGING

December 2019: Select initial 2 host sites

March 2020: Install initial 2 host sites and start fundraising

April 2020: Finalize selection of additional host sites

July 2020: Complete installation of additional host sites

July thru December 2021: Collect data from initial host sites with Community Charging Pilot



Resources

- Citizens Utility Board – Clean Energy Jobs Act: <https://www.citizensutilityboard.org/clean-energy-jobs-act/>
- Pollution map (air quality included) of Chicago neighborhoods: <https://www.nrdc.org/experts/meleah-geertsma/new-map-shows-chicago-needs-environmental-justice-reforms>
- Clean Cities Coalition Chicago: https://www.chicago.gov/city/en/depts/cdot/supp_info/chicago_area_cleancities.html
- Environmental Entrepreneurs and I Hotels Fellowship: <https://www.e2.org/>
- Chicago For EVs Advocacy Group: <http://www.chicagoevs.org/>

THANK YOU!



A severe case of range anxiety...

Vanessa Perkins

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