MAKING THE CASE FOR COMBINING EE UPGRADES WITH COMMUNITY CHARGING INFRASTRUCTURE

Bronzeville Community EV Charge Network

A Peer-To-Peer Network of Electric Vehicle Chargers for Single-Family and Multi-Family Residences in Bronzeville

THE VISION

The Community of the Future is a place where ComEd and a local community collaborate to create a "smart community"—connected, green, and resilient—in which the smart grid and a host of other technologies and related services are fully leveraged to enhance the everyday lives of community members.

Imagine a smart community where residents and businesses...

- Are connected in new ways
- Can reduce their environmental footprint
- Have more options and control over their energy usage
- Find value in new products and services to save money, go places, find comfort

Bronzeville has been thoroughly vetted as a resilient, sustainable community that is proven adaptive to innovation and technological advancement.

WHY BRONZEVILLE?

A storied neighborhood with a rich legacy of creativity and diversity, Bronzeville has:

Critical public infrastructure

The Bronzeville area is home to critical public infrastructure, including hospitals, police headquarters and fire departments.

A wealth of technical innovation underway that can spur smart city development

Bronzeville is home to Illinois Tech, which is a partner with ComEd on new energy technology that has already brought microgrid and nanogrid technology to the area. ComEd and the Illinois Institute of Technology, also known as Illinois Tech, are also partnering on other innovations, including smart streetlights, smart water meters, EV charging stations and more.

Engaged leaders and community members

Home to a vibrant and diverse community, Bronzeville has residents, businesses, and leaders who are highly engaged in efforts to continue invigorating the neighborhood - creating an ideal setting for learning and exploring the full potential of smart energy-related technology.

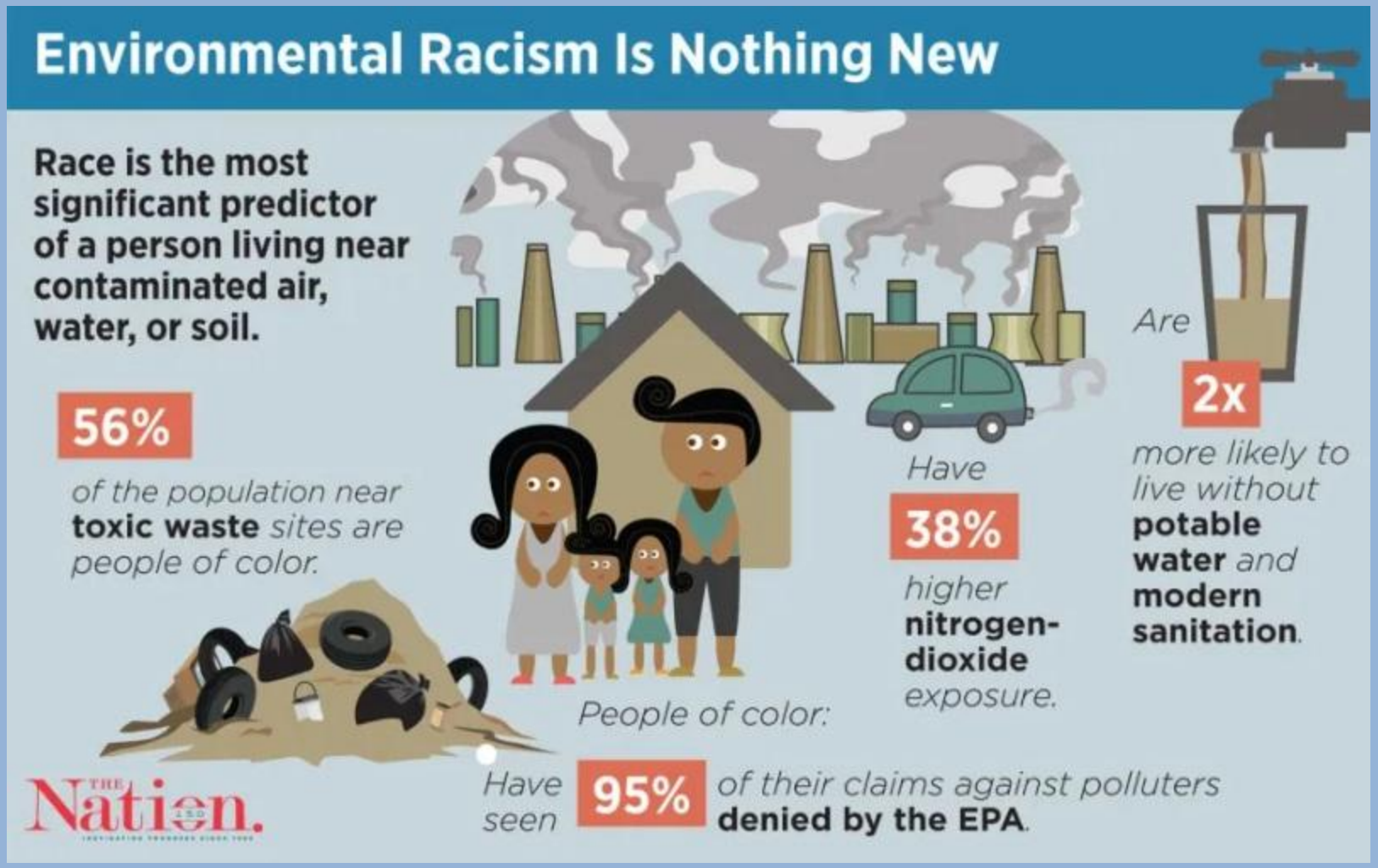
•Critical Public Infrastructure – Police, Fire, Hospitals, Smart Streets, Smart Lights, Smart Meters, EV Chargers;
•Leading Institutional Partners – IIT, Illinois Tech, UIC, ComEd, Microgrid Cluster Technology;
• Vibrant, diverse and fully engaged community.

Bronzeville is a Living Lab for Smart City development.

For Illinois to achieve 25% renewable energy by 2025

All communities must be incentivized to switch to EVs

ESPECIALLY IQ communities



Poor air quality from toxic emissions, ground-level ozone, particle pollution, carbon dioxide, lead and other pollutants are highest in IQ communities on the south and west sides.

COMBINING EV CHARGING INSTALLATION WITH ENERGY EFFICIENCY UPGRADES

EV Adoption in IQ Communities Will Hasten Transition to Clean Transportation.

Providing Access to Low-cost Charging in Historically Under-invested Communities Will Lower Barriers to Entry Into EV Market.

EVs Are Actually Cheaper o Maintain and Fuel Than Cars With ICEs.

Used EVs Offer More Affordable Entry to EV Market For Lower Income Buyers.

Providing Low-cost Charging With Easy Access Removes Barriers to EV Entry.

COMBINING EV CHARGING INSTALLATION WITH ENERGY EFFICIENCY UPGRADES

Accelerated Deployment of EE Upgrades in Single-Family Homes and Commercial Buildings is the Most Cost-Effective Avenue to Achieve this Goal.

COMBINING EV CHARGING INSTALLATION WITH ENERGY EFFICIENCY UPGRADES

Dearborn Homes

Ida B. Wells High Rise

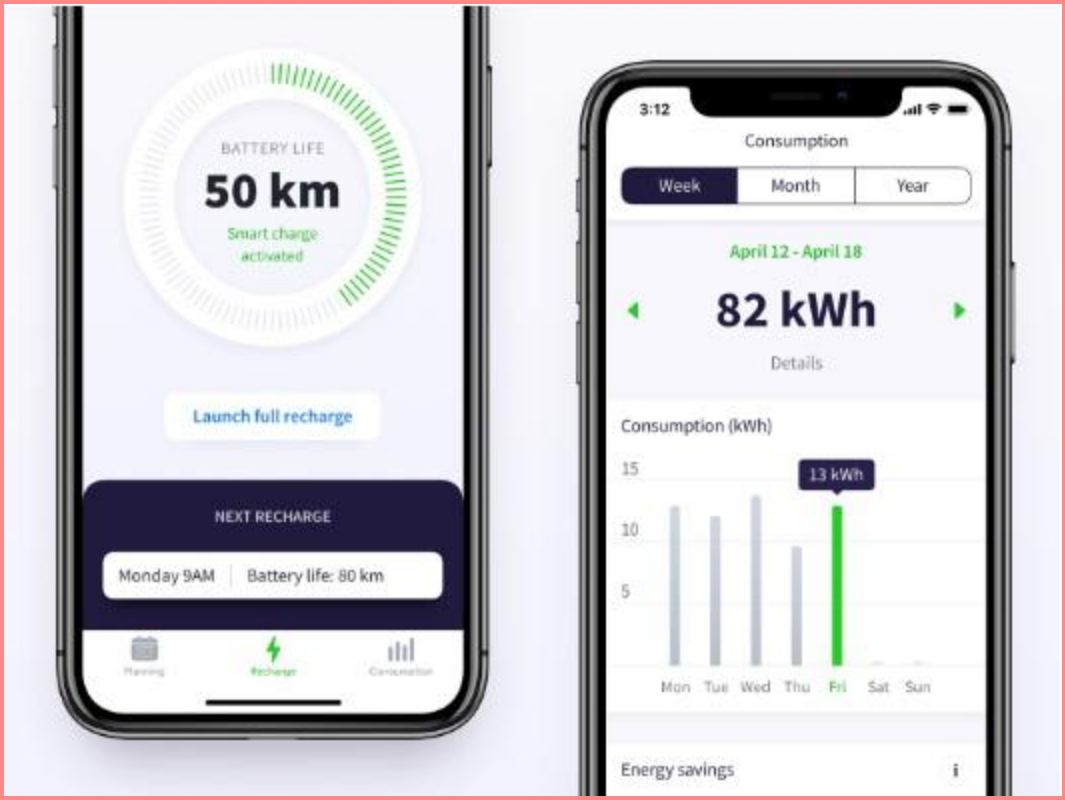
Not only does energy efficiency represent the lowest-cost energy supply resource, but it also offers benefits including local economic development, load balancing capabilities, and improvements in building stock quality, productivity, and public health.

COMBINING EV CHARGING INSTALLATION WITH ENERGY EFFICIENCY UPGRADES

Utilities Have Leverage by Targeting the Point Of Building Renovation as a Trigger to Integrate Energy Efficiency, Smart EV Charging Technologies, and Flexibility to Minimize Costs and to Support a High-Penetration Renewable Energy Future.

Electricity costs and load distribution can be spread to reduce costs for all electricity users.

Smart Charging Technology Already Enables Variable Rate Charging for EV Users Based on Income Qualification and Numerous Other User Categories.



Charging Costs Will Be Influenced By Time Of Use (TOU) Metering and Sliding Scale Rates.

EV Drivers

- Sign up and register EV
- Find, reserve, and pay for charging near work, home, and on road trips

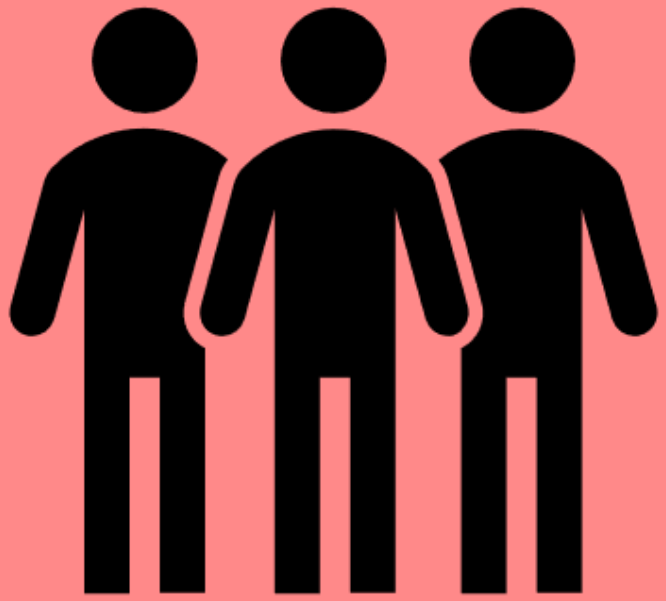
Residential Hosts

- List home charging station to support EVs and earn money
- *Optional:* Compatible WiFi-enabled chargers enable automated access control

Commercial & Multi-Family

- Install compatible smart chargers
- Use EVmatch for lowest-cost charging management software
- Set differentiated pricing & availability for unique user groups

Parking + Outlets + Sharing economy
= EV infrastructure
= Accelerated EV adoption



CUB STUDY

"Charging Ahead: Deriving Value from EVs for All Electricity Customers

Analysis of Savings Assuming Varied EV Growth Scenarios

The study found that optimized charging would lower the costs for all electric customers—even those who don't own a car — under any EV-adoption scenario.

Total savings from 2019-20030:

- **$238 million to $2 billion in lower costs for energy;**
- **$32 million to $124 million in lower capacity costs;**
- **$198 million to $536 million in lower per kilowatt-hour (kWh) residential rates for delivering electricity (because the utility's cost to provide service is spread out over more kWhs).**

IMPLEMENT OPT-OUT DYNAMIC PRICING PLAN FOR EV HOME CHARGING

Automatically enroll all EV owners in EV-only time-of-use (TOU) rates. All EV owners will save money by charging in off-peak periods, and other customers will benefit from a more efficient electricity system;

Allow customers to choose a different option, such as a dynamic-pricing rate that changes hourly or the standard flat rate that most customers pay;

The EV-only TOU rates should NOT require a separate electric meter, a separate bill or extra fees. A customer's EV usage should be listed separately on electric bills.

IDENTIFY BARRIERS TO PUBLIC CHARGING

Consider Alternative Rate Designs to Encourage Development Of **Public Charge Stations**;

Consider Benefits, Costs and Different Ways of Involving Utilities in Developing **Public-charging Infrastructure.**

Develop Online Services, Apps and Other Tools to Promote Optimized Charging for the Benefit of All Electric Customers:

Allow customers to set charging so that it automatically responds to price and other signals such as emissions and real-time renewable generation output;

Provide customers with a shadow bill option that would allow them to compare current and historical monthly bills under different rate plans;

Include calculators to compare the costs of EVs vs ICEs.

DESIGN INNOVATIVE PROGRAMS TO ENSURE ALL CUSTOMER SEGMENTS BENEFIT

Identify areas in particular need of electrification benefits, such as **environmental justice** and **economically disadvantaged communities**;

Develop strategies, with stakeholder input, to address challenges of **EV charging availability** at **multi-unit buildings** and for **drivers without access** to a garage or permanent parking space.

The **City of Chicago** just took an important step in the right direction by passing an Ordinance to strengthen requirements for

EV Readiness at **Commercial** and **Residential Buildings** going forward.

But, that's for

New Construction. It's a much heavier lift to make **EV Charging Infrastructure available to EV and PEV Drivers** who live in **Existing Multi-unit Dwellings** in South and West side **Neighborhoods.**

We are proposing a pilot demonstration of how a robust **Community Charging Infrastructure**, located in Bronzeville can **accelerate EV adoption** by making affordable charging options available to Residential and Business customers using a **Peer-to-Peer** network of **EV Charging** Stations.

There are many examples of how public or community charging can expand the universe of EV users by lowering barriers to EV ownership and spreading costs across the enterprise.

A COMMUNITY PEER-TO-PEER NETWORK OF PRIVATELY-OWNED CHARGERS COULD BE LEVERAGED TO BRIDGE THE GAP, AND WILL YIELD BENEFITS THROUGHOUT THE ELECTRIFICATION ECOSYSTEM:

Utilities derive benefits from smart grid management and expanded distribution of kWh sales, thereby offering potential savings through reduced rates for customers.

Growth in EVSE manufacturer sales.

EV automakers will see a boost and will benefit from expanded used EV sales.

- **City of Chicago** and **State of Illinois** will grow closer to **achieving climate goals** as transition to EVs accelerates.

- **Rideshare Operators** will benefit from lower barriers to EV conversion, yielding higher earnings for drivers.

- **Fleet Operators** find cost savings facilitate easier transition to EV.

- **Environmental Program Goals** are advanced.

- **Residents and Businesses** in **IQ communities** learn how affordable and accessible EVs are and move more quickly to adoption.

How It Works:

Utilities cover upfront capital investment cost to upgrade electrical panels where necessary and cover cost of extending conduits to host chargers. Installation costs are the single biggest barrier to building out EV infrastructure. “The cost of a single port EVSE unit ranges from $300-$1,500 for Level 1, $400-$6,500 for Level 2, and $10,000-$40,000 for DC fast charging. Installation costs vary greatly from site to site with a ballpark cost range of $0-$3,000 for Level 1, $600- $12,700 for Level 2, and $4,000-$51,000 for DC fast charging.”

(“Costs Associated With Non-Residential Electric Vehicle Supply Equipment, Factors to consider in the implementation of electric vehicle charging stations” November 2015 Prepared by New West Technologies, LLC for the U.S. Department of Energy Vehicle Technologies Office)

Bronzeville Community EV Charge Network empowers community partners to host a smart charging station(s). Operators are positioned to derive income sufficient to cover hosting costs and earn a small profit.

Community hosts include private property owners as well as neighborhood anchors like small business cluster parking lots, churches, community centers, schools, and other local commercial entities who want to participate in the EV charging infrastructure, such as multi-unit buildings with available parking, Airbnb properties, etc.

Hosts are connected via a network application that enables users to find, cost compare, reserve and pay for charging times, a la EV Match https://www.evmatch.com/ or any similar, affordable app using non-proprietary software.

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

The Bronzeville Community Charging Pilot will help subsidize cost of chargers for hosts by covering installation and/or hardware/software as long as hosts agree to tie in variable rate charging to help optimize off-peak usage. This enables efficient and green energy usage to charge vehicles. Surge pricing limits peak usage and pushes users to more affordable off-peak charging. **Tiered pricing invites participation by multiple user categories, including High-end EV owners, Commercial Fleets and Liveries, Income Qualified EV Drivers.**

Smart Level 2 charging stations are ideal for community charging as they allow hosts access control, enable data collection, are less invasive to the grid, avoid demand charges, and can be updated continually in a peer-to-peer charging network. Units can be portable or fixed/hardwired. Equipment (costs less installation) should be subsidized to the point where hosting costs no more than $1000/charger. This makes hosting affordable program subsidies and is perfect for local driving patterns
(1 hour of charging = 30 miles of range).

Ideal locations for participating in the Bronzeville Community EV Charge Network will include:

Available parking capacity to accommodate charging;
Electrical panels in close proximity to available parking;
Internet connectivity or Wifi.

Cost Proposal

$4 million will cover the cost electric panel site upgrades, installation and purchase incentives and rebates for up to 2000 charging sites in Bronzeville based on program estimates in other jurisdictions.

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Vanessa Perkins, Community Charging E2 Fellow, 2018-19

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https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=991a74b5-15ed-46ca-9706-aac6d45897a7

On January 9, 2019, the Michigan Public Service Commission issued an order approving Consumers Energy Company's request for a three-year pilot program to invest in EV charging infrastructure.

In the Matter of the Application of Consumers Energy Company for Authority to Increase Its Rates for the Generation and Distribution of Electricity and for Other Relief, Order, Case No. U-20134, Mich. Pub. Serv. Comm'n., issued Jan. 9, 2019, available at:
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