



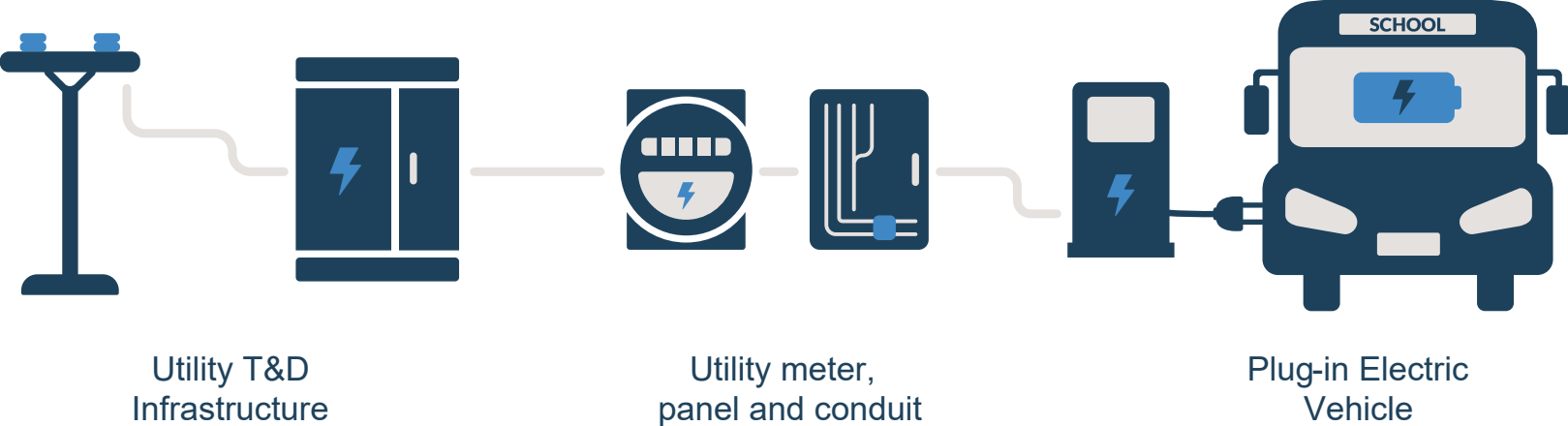
Inclusive Utility Investments for Transportation Electrification

Holmes Hummel
Founder & Co-Executive Director

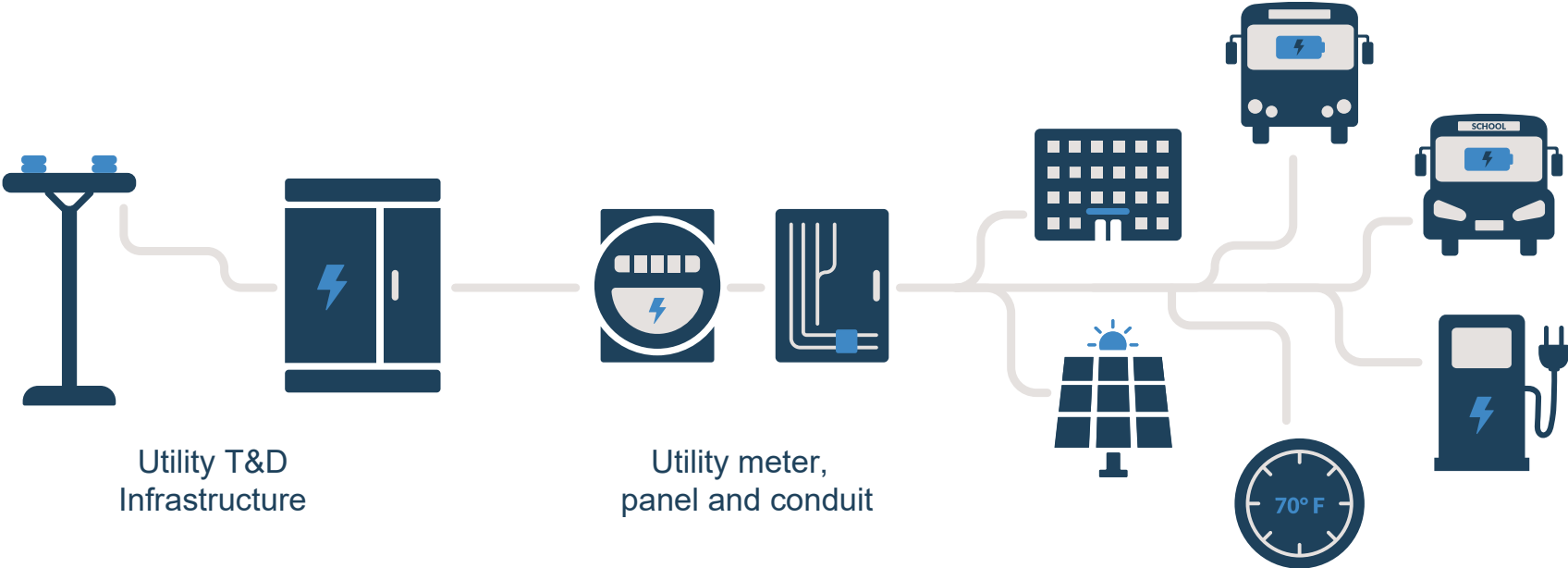
August 16, 2023



Willingness to pay for electrification upgrades is **constraining the pace of transition** —and utilities have **unique instruments** to reduce that upfront cost barrier



Transportation electrification is one among several types of upgrades facing financial barriers to adoption that **stratify who gets upgrades and how soon**

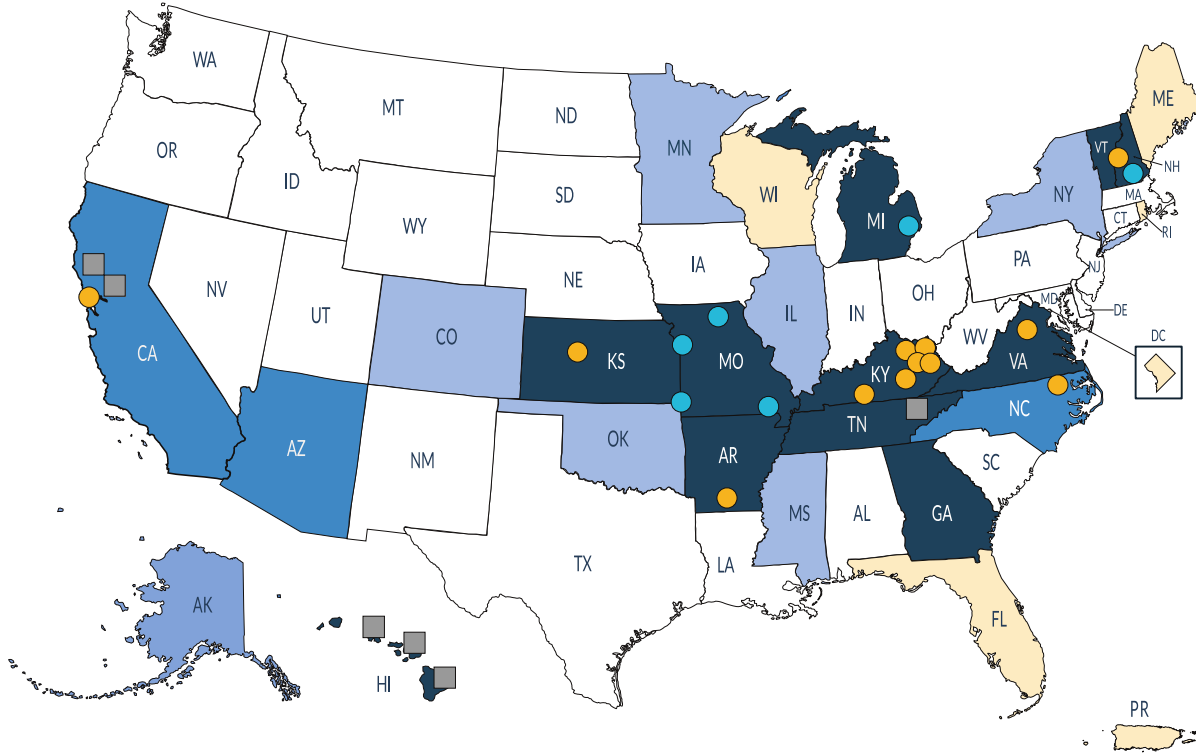


Inclusive Utility Investments

A financial solution that allows utilities to invest in all **cost-effective** clean energy upgrades at a site and recover those costs with a **site-specific, tariffed charge** on the customer's utility bill that is **less than the estimated cost savings** from the upgrades.

https://www.energystar.gov/products/inclusive_utility_investmen

Adoption Status of Inclusive Utility Investment 2023



Approved by state energy regulators [Dark Blue Box]

Formal state regulatory adoption proceedings underway [Medium Blue Box]

Formal due diligence underway by state regulators, legislators, &/or utilities [Light Blue Box]

Informal due diligence underway by state regulators, legislators, &/or utilities [Yellow Box]

No activity [White Box]

Active Program - Rural Coops & Munis [Orange Circle]

Active Program - Investor Owned Utilities [Cyan Circle]

Program Ended [Grey Square]

Inclusive Utility Investments in Electric Transportation

- Accelerate investments on EV infrastructure and EV fleets in **affordable and equitable terms**
- Reduce pressure on rate increases for all customers. This mechanism is **rate neutral** after cost are recovered.
- Utilities receive approval from Commissions or oversight Boards:
 - to pay for the upfront costs for **EV charging infrastructure** or **on-board batteries**
 - to recover these investments via **a service charge on the bill** for that service location, until all costs are recovered
 - the annual cost of the service charge is capped at 80% of the estimated savings from switching from diesel to electric
- Assets belong to the customer after cost recovery
- Customers could be individuals or fleet owners with **high savings potential** (i.e. high mileage vehicles)



● Detroit Pilot approved by Michigan Public Service Commission

eFleet Battery Support Program

- DTE will invest in 5 on-board batteries or up to **\$2m** for electric transit buses
- The Detroit Transport Agency will use complementary public funds (FTA) to cover the rest of the e-buses costs
- After the approval of this pilot in November 2022, the Commission requested to expand the use of the mechanism **from transit to school buses and other fleets**
- DTE filed in January 2023 a new proposal for another **\$3m**



Opportunities for Utilities with Electric School Buses

Stakeholders can engage utilities to...

- Define electricity rates (no demand charge?)
- Build and own utility-side infrastructure that supports transition to electric bus fleets
- Pay for the charger and other assets on the customer-side, on terms with full cost recovery
- Inform energy management and V2X dispatch that generates more value streams.



**ALLIANCE FOR
ELECTRIC
SCHOOL BUSES**

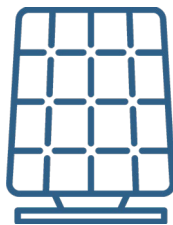


What is bidirectional charging?

Bidirectional charging— not only to store energy but send it back to:



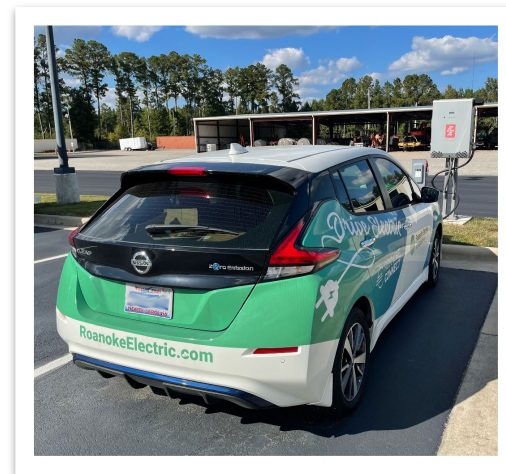
Home/Building (V2B)



Electric Grid (V2G)



Everything Else (V2X)



Partners for V2X Research in North Carolina



Roanoke Electric Cooperative

Your Touchstone Energy® Cooperative 



NC CLEAN ENERGY
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This North Carolina project team chose well-defined **use cases** from a menu of options

Customer Bill Management

- Reduce the monthly demand charge for the maximum demand at the member owner's facility

System Capacity Requirements:

- Reduce the amount of power purchased by the utility during peak hours for the system statewide

System Backup and Resiliency

- Supplement and support the existing diesel backup generator
- Transition reliably from grid-connected operations to Islanded Microgrid, and back

Conclusions– Initial Performance

- To our knowledge, this is the first examples of a UL Listed, bidirectional EV charging in the U.S.
- Demonstrated two value streams being exercised simultaneously

Total Real-World Savings for REC



\$267.54 per month



\$3,210.48 per year

- This exceeds the lease cost of the vehicle for Roanoke Electric
- This covers >48% of the 60-month financed cost of a 2022 Nissan Leaf S Plus



Thank You

www.cleanenergyworks.org