



CONNECTIONS **SUMMIT**

◆ ELECTRICITIES

Lessons Learned In EV Infrastructure

Private and Public Chargers in New Bern

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Electric Profile

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Electric Profile

High Demand

ChargePoint
(150kVA TX NR, 117kW Peak)

Piggly Wiggly
(150kVA TX NR, 141kW Peak)

Tesla #1
(750kVA TX NR, 620kW Peak)

Super Walmart
(750kVA TX NR, 724kW Peak)

Low Usage

ChargePoint
(2.1MWh/month) (LF \approx 3%)

Piggly Wiggly
(62MWh/month) (LF \approx 60%)

Tesla #1
(22.3MWh/month) (LF \approx 7%)

Super Walmart
(308MWh/month) (LF \approx 62%)

Site Considerations

Site Considerations (Public & Private)

Is there adequate capacity at that location?

Is a line extension required & who pays?

Recommended equipment rating $\geq 80\%$ of station demand.

Recommend demand solutions (rates/LM/both).

Proximity to 30min-1hour activities (park, food, shopping).

Approachable from major corridor.

Protection is the responsibility of owner.

Public Ownership

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Pros & Cons of Public Ownership

Pros

- **Some customers do appreciate the effort**
- **Added load with adoption**
- **More control with location/timing/size/LM/etc.**

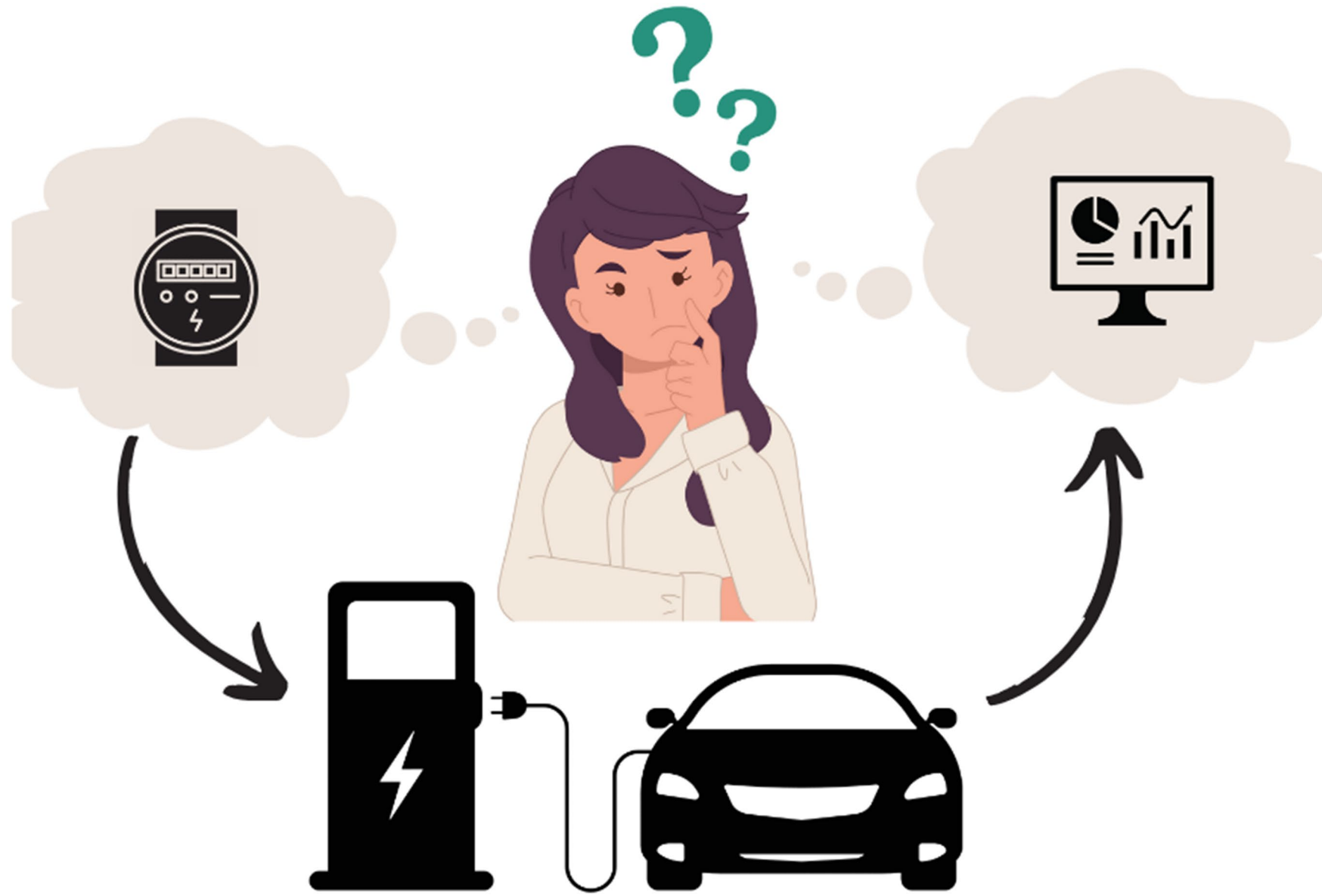
Cons

- **Losses* are absorbed by utility/rate payers**
- **Very expensive, high maintenance hardware**
- **Software limitations**
- **More politics, potential liability**

*Losses are both electrical in nature as well as financial

Private Ownership

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Pros & Cons of Private Ownership

Pros

- Rates protect utility
- Less politics
- Losses* are absorbed by private business
- Added load with adoption
- No additional maintenance above typical customer

Cons

- Little to no warning
- Location/size/type chosen by others

*Losses are both electrical in nature as well as financial

Financial Analysis

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Key considerations with Availability:

- “Standard voltages, purpose of EV charging..”
- ≤ 1,000 kW ~ 1,000 kVA transformer (Capacity)

Key considerations with Energy Charge:

- Tiered to be as fair as possible
- ≥ 20% LF may not be feasible

Key considerations with Demand Charge:

- Valid for NCEMPA CP variance

Key considerations with Load Factor:

- Any Time Demand vs CP
- Session limitations

SECTION 7. That the following Commercial Electric Vehicle Charging Station - CP Schedule 14 is hereby adopted effective January 26, 2022:

**CITY OF NEW BERN
Commercial Electric Vehicle
Charging Station Service – CP
Schedule 14**

AVAILABILITY
This schedule is available for electric service at a single point of utility metering at one of the City's standard voltages, for the purpose of providing power at commercially owned electric vehicle (EV) charging stations.
This schedule is not available whenever the monthly Any time demand exceeds 1,000 kW.

MONTHLY RATES

Customer Charge	_____ per month
Energy Charge	
Load Factor less than or equal to 10%	_____ per kWh
Load Factor greater than 10% and less than or equal to 20%	_____ per kWh
Load Factor great than 20%	_____ per kWh
Demand Charges	
Coincident Peak Demand	_____ per kW
Excess Demand	_____ per kW

DETERMINATION OF BILLING DEMAND
Coincident Peak Demand shall be the average kW demand measured in the 60-minute interval used by the North Carolina Eastern Municipal Power Agency for wholesale billing purposes during the corresponding month of the customer's billing.
Excess Demand shall be the highest 15-minute Any Time Demand recorded during the current billing month, less the Monthly Coincident Peak Demand for the current billing cycle.
Any Time Demand shall be the highest 15-minute demand recorded during the current billing cycle.

DETERMINATION OF ENERGY
Energy charge shall be determined by the calculated monthly load factor (LF). The energy charge shall adjust up or down when the calculated monthly load factor exceeds the threshold for a period of six (6) consecutive billing cycles. Load factor shall be determined by the total energy hours used during the billing cycle divided by the product of the anytime demand and the number hours in the billing cycle.
 $LF = kWh / (Any Time Demand \times Hours in Billing Cycle)$

NOTIFICATION BY THE CITY
The City will use diligent effort to predict each monthly system peak and notify the customer in advance; however, the City is not able to guarantee an accurate prediction, and notice will be provided. Notification by the City will be provided to the customer by direct telephone communication or automatic signal, as mutually agreed. The customer will hold the City harmless in connection with its response to notification.

POWER FACTOR CORRECTION
Where the power factor of the consumer's installation is less than 85%, the City may correct kWh consumption for the month by multiplying by 85 and dividing by the actual power factor.

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Financial Reality

Adoption dictates usage, which dictates feasibility and rates.

Not feasible with current adoption rates, foreseeable future.

Subsidies mask long term financial difficulty.

Return On Investment is currently beyond the life expectancy & warranty of the hardware.

Ask Me Anything

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