

Impact of EVs on Electric Utilities

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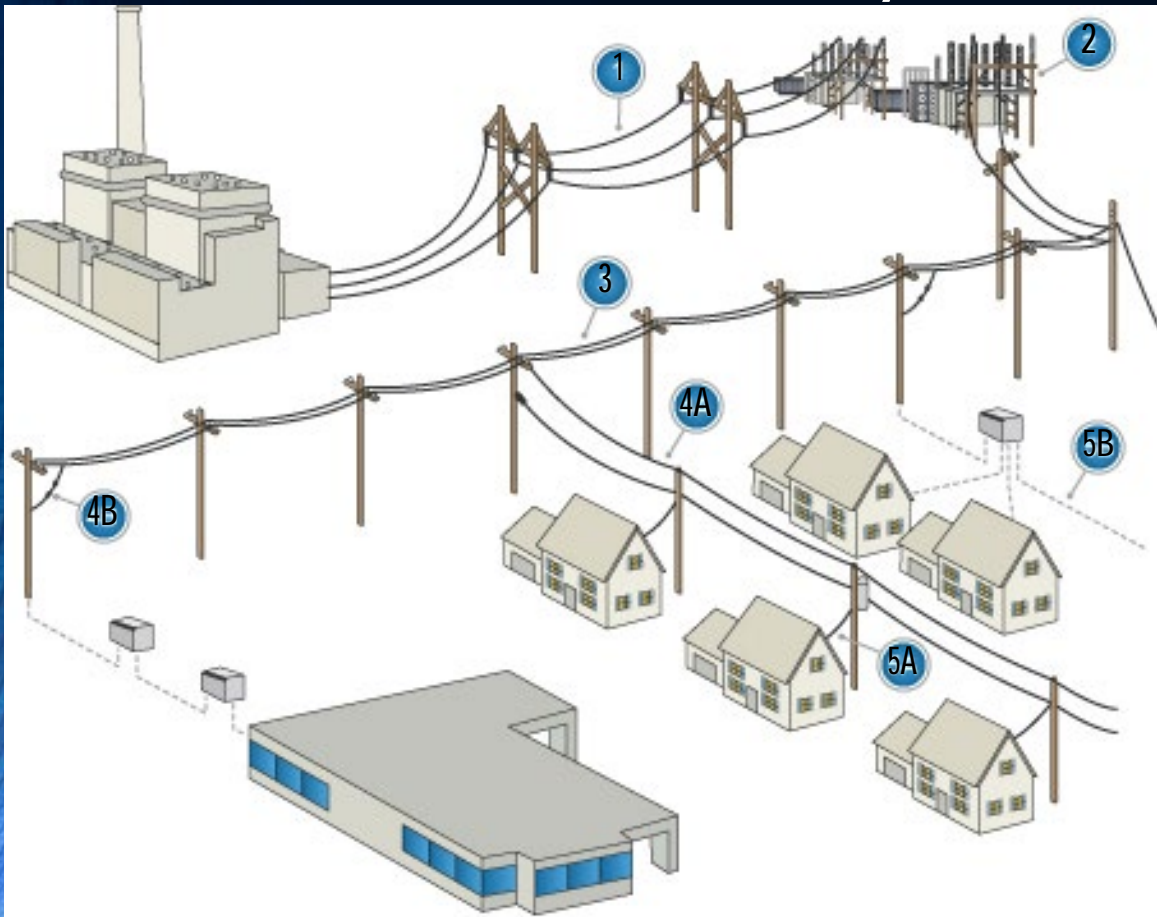
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Overview of C's

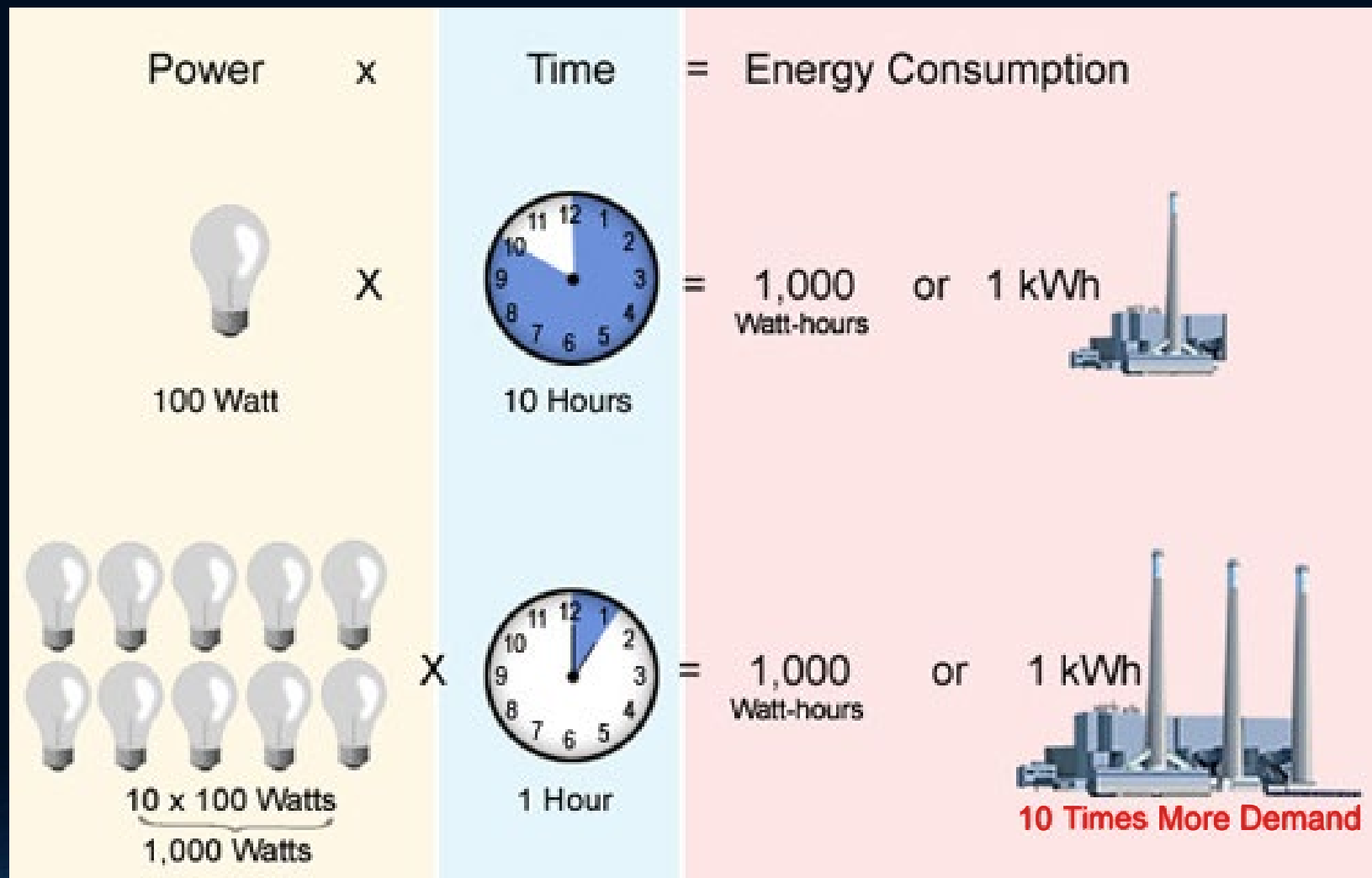
- Capacity - Electric System
 - Electric Utility Overview
- Customer Convenience - Time and Place of Charge
 - Existing System
 - New Infrastructure
- Cost of Electricity
 - Working Together – Utilities and Customers

Electric Utility Infrastructure



Electric Terms

- Demand (Power)
 - kW
- Energy Consumption
 - kWh



EV Chargers

Level 1

- 4 miles/hour
- 1.4kW; 120V, 20A

Level 2

- 32 miles/hour
- 7kW; 240V, 40A

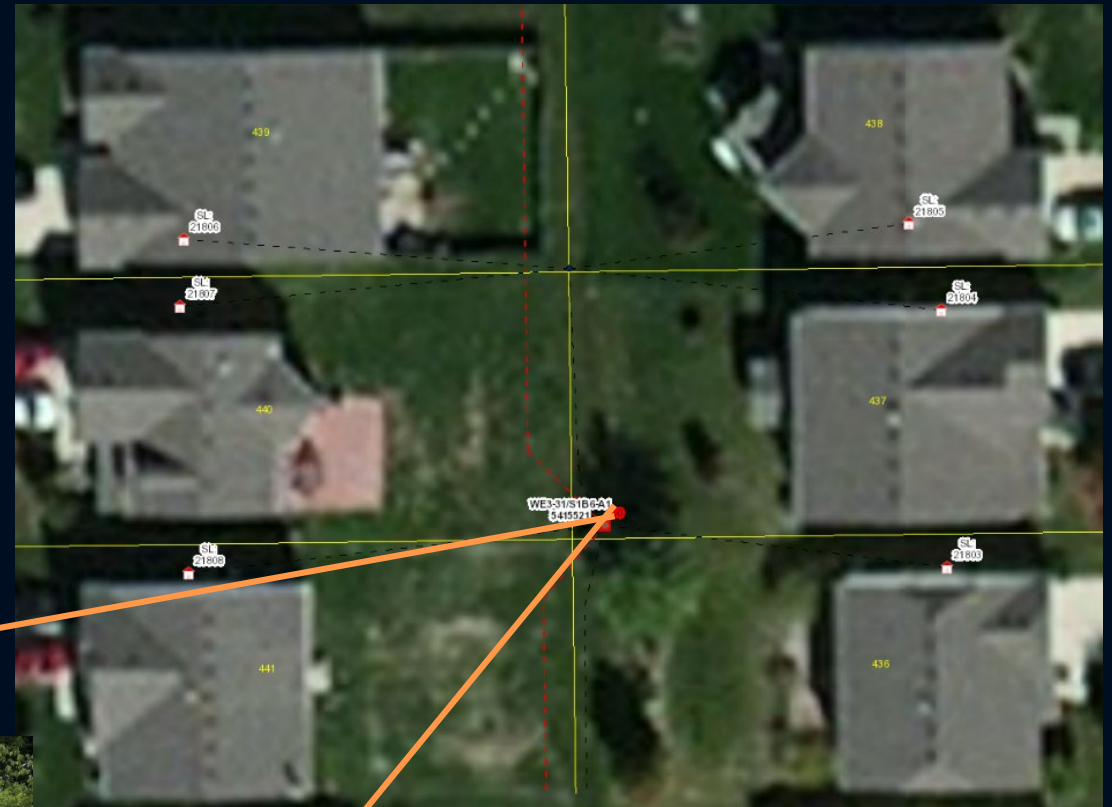
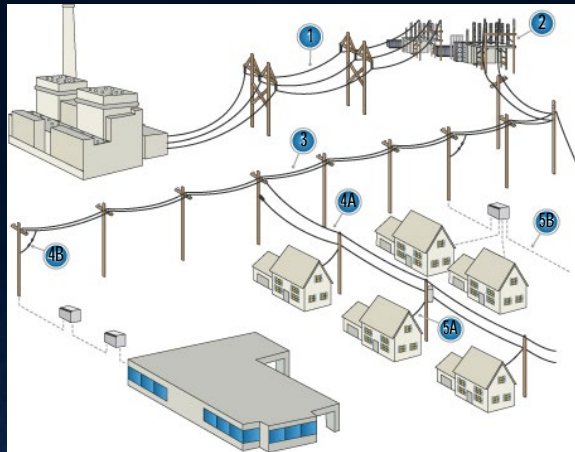
DC

- 178 miles/hour
- 25-50kW; 480V, 100A

DC Charging



Electric Distribution



Household Appliances

HVAC

- 4.5kW
- 240V, 40A

Electric Water Heater

- 4.5kW
- 240V, 40A

Electric Dryer

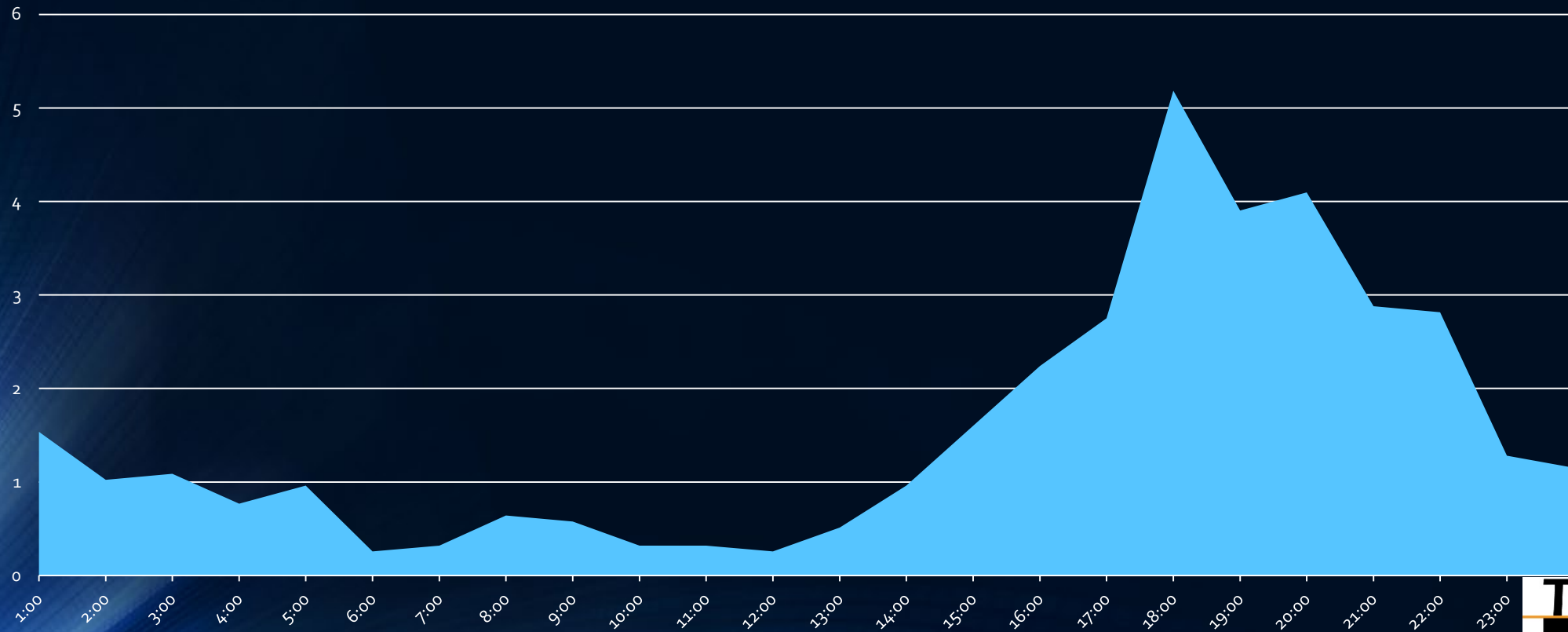
- 3kW
- 240V, 30A

Electric Range

- 5kW
- 240V, 50A

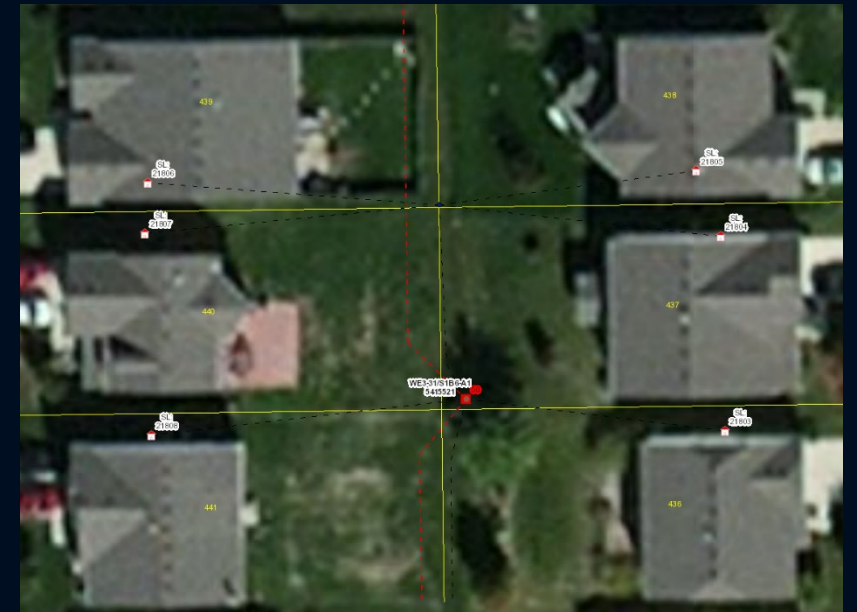
Residential Load Throughout Day

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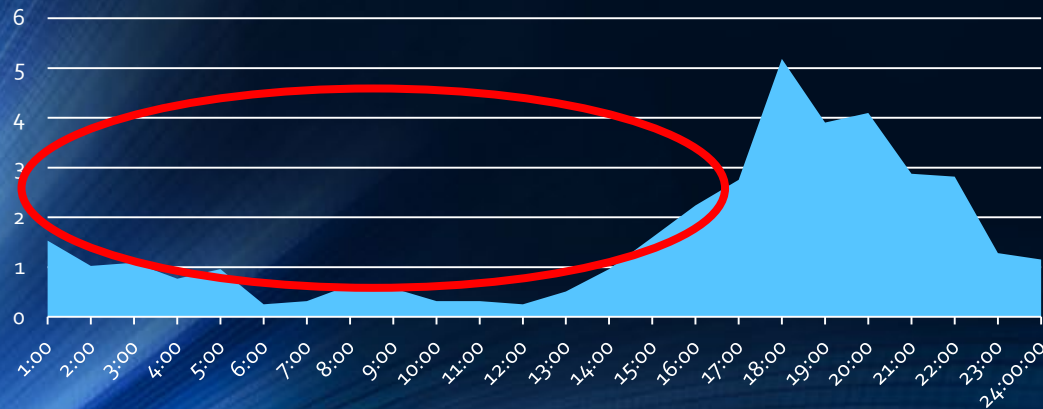


Capacity & Convenience

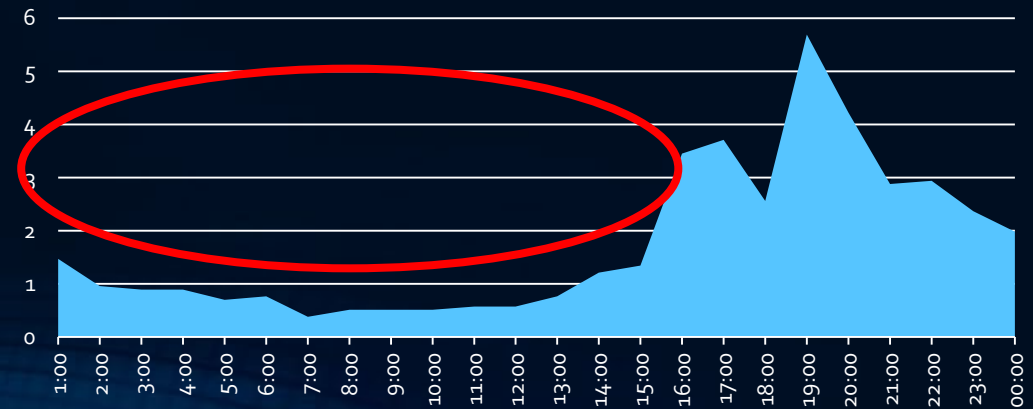
- Time of EV Charging
 - Upgrade Infrastructure (\$)
 - Charge When System Capacity Available



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Cost of Electricity

- Electric Rates
 - Generation
 - Transmission & Distribution
 - Maintaining Infrastructure
- Electric System Batteries?
 - Utility and/or Residential



Summary of C's

- Capacity - Electric System
 - Demand & Energy
- Customer Convenience - Time and Place of Charge
 - Flexible – Optimize Existing Infrastructure
 - 24/7 – Upgrade Electric Infrastructure
- Cost of Electricity
 - Working Together – Utilities and Customers

Thank you!

