Prepping for the EV Revolution

PECAN STREET
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Question? Use the chat function.
Shifting Energy Use Trends Due to COVID-19

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EV Drivers Sip at Chargers

70% of EV charge cycles are 10 kWh or less.
Annual EV Charging Load
TX, CA, NY / Sept ‘21–Aug ’22 / N=73

Annual EV Charge Load By Hour
Top Ten Homes with Most EV Charging by kWh

Midnight
Noon
Midnight
Residential EV Charge Load in Perspective
EV Charge vs. Home Consumption vs. Solar Production N=43 Austin, TX / % Hours ERCOT Real Time Price > 90th Percentile

2021-22 Avg Hourly Load By Season

- **Summer**
  - Home Consumption
  - Home Solar
  - EV Charging

- **Shoulder**

- **Winter**

Potential Load Flex Scenarios

- **Summer**
  - Flexed EV Load

- **Shoulder**

- **Winter**

ERCOT Price > 90th Percentile
- Noon: 15%
- Midnite: 10%
- Midnite: 5%
Managed Charging
Managed Charging Saves Money

Summer Average EV Charging Load vs Status
35% Charging Cycles Shifted With Upgraded Charging Power

EV Charge Profiles at Different Rates
EV Charging in Crisis Mode

45 Homes With EV Chargers and Uninterrupted Power Jan 31 – March 7

EV Charging kWh was 40% lower during the week of Winter Storm Uri than the two weeks before and after.
EV Charging in “Pre-Crisis” Mode

2022 Summer Average Hourly EV Load
Texas Homes / N=55

Hourly EV Load During ERCOT 2022 Summer Conservation Appeals

Texas' summer power demand has far exceeded ERCOT's projections

Source: Electric Reliability Council of Texas (ERCOT) / Swati Verma
Reuters Graphics
V2H Home Backup Integration Equipment Example

Source: Delta Electronics Residential Energy Storage Inverter with Integrated DC Charger for North America Spec Sheet
Potential EV Battery Support

140 Texas Homes With Uninterrupted Power Following Winter Storm Uri Grid Outage

- 40kWh Smaller Battery
- 80kWh
- 120kWh Larger Battery

Avg Home Main Breaker

Feb 14 - Feb 19

Grid Power Out, 26 Hours, 52 Hours, 83 Hours
Balancing Load
Residential Loads Are Changing

One Minute Data for Austin Home in February
High 36 °F / Low 30 °F

Gas Assisted Home

Fully Electrified Home

Laundry
Kitchen
Waterheater
HVAC
Potential for EV Charging to Balance Home Load

All Electric Home With Modeled Flexible EV Charging Load

Laundry
Kitchen
Waterheater
HVAC
EV

Modeled Flexible EV Charge Load (22kWh / Max 6kW)
V2X Infrastructure

• Standardization / Open Source / Common Framework
• FERC 2222
• Texas Pilot
• Workforce development
Questions
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Thank You