



PECAN STREET



# Smart Charging: The Future of Residential EV Charging





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## Field Research



## Our Approach

- 1,000 homes
- Real-time, unique data
- Expanding into CA, NY, and MI: 100 homes per state

## Data Collection and Access



**2.5 BILLION**  
RECORDS ADDED DAILY



**2,000**  
UNIVERSITY-SPONSORED  
RESEARCHERS



**200+**  
PEER-REVIEWED PAPERS

- The world's largest residential energy research database
- Innovative data privacy & security processes
- All available to academic and corporate researchers

## Testing & Verification Lab

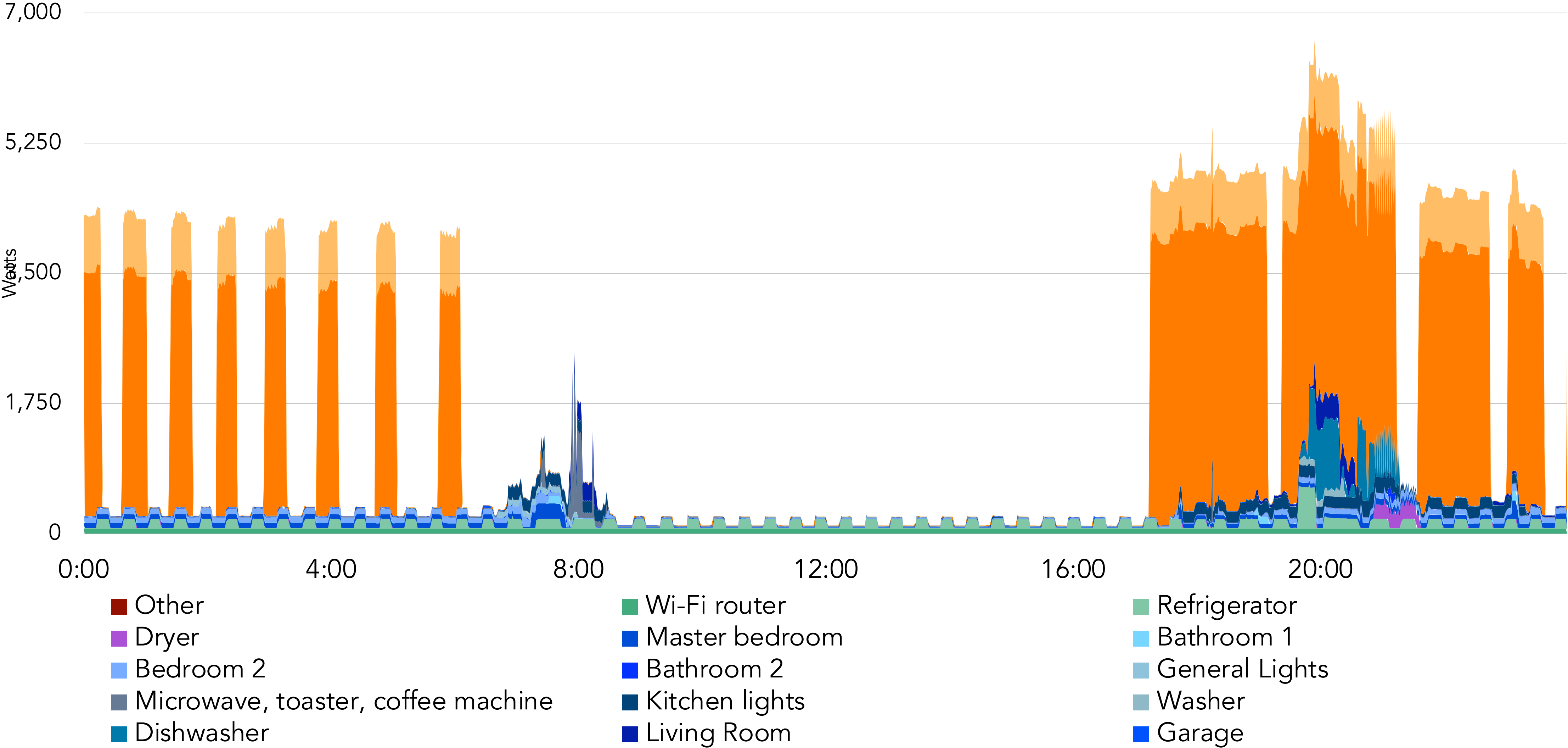


- Affordable concept and prototype testing center for smart residential energy solutions
- Allows for rapid product and market verification testing
- Texas's first grid-connected V2G testing center



# High Resolution, Disaggregated Data

One-Minute, Circuit Level Data



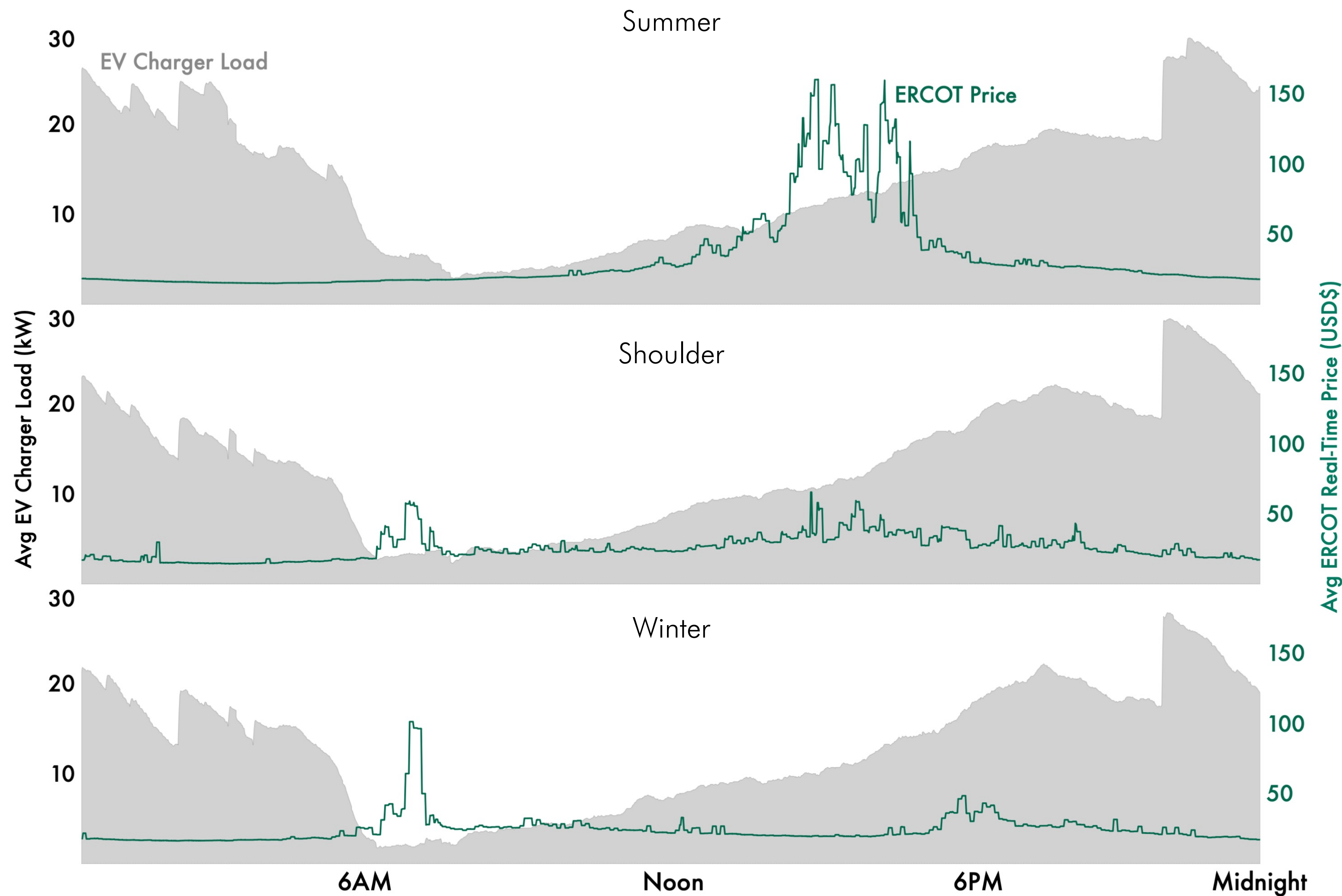
# Get in touch!

[shinson@pecanstreet.org](mailto:shinson@pecanstreet.org)

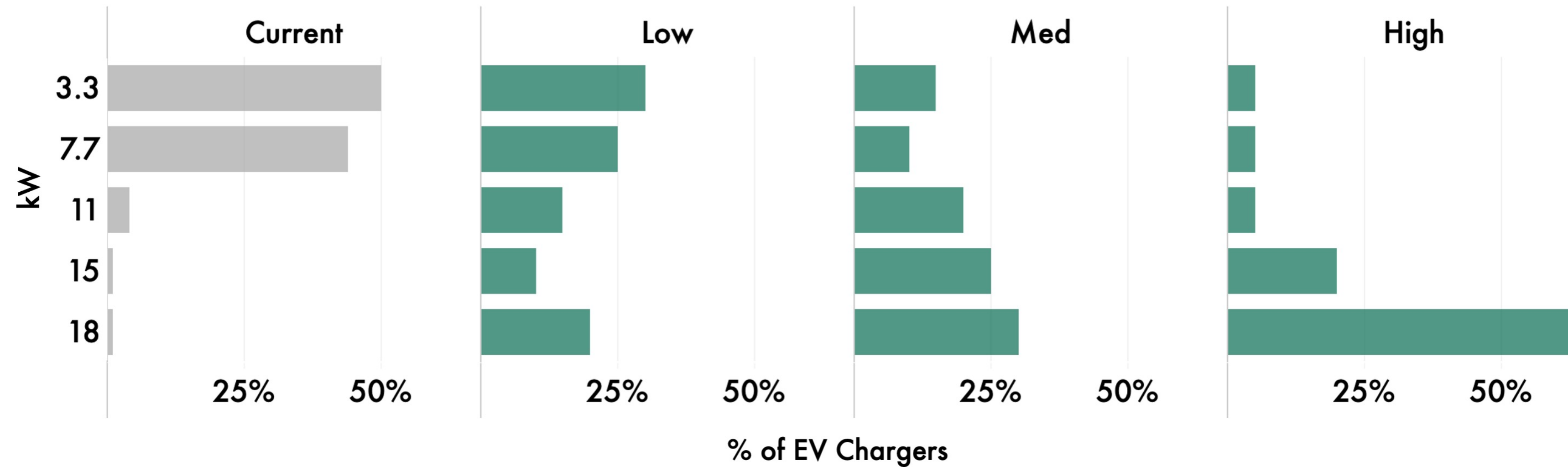
[pecanstreet.org](http://pecanstreet.org)

[pecanstreet.org/chargingSMART](http://pecanstreet.org/chargingSMART)

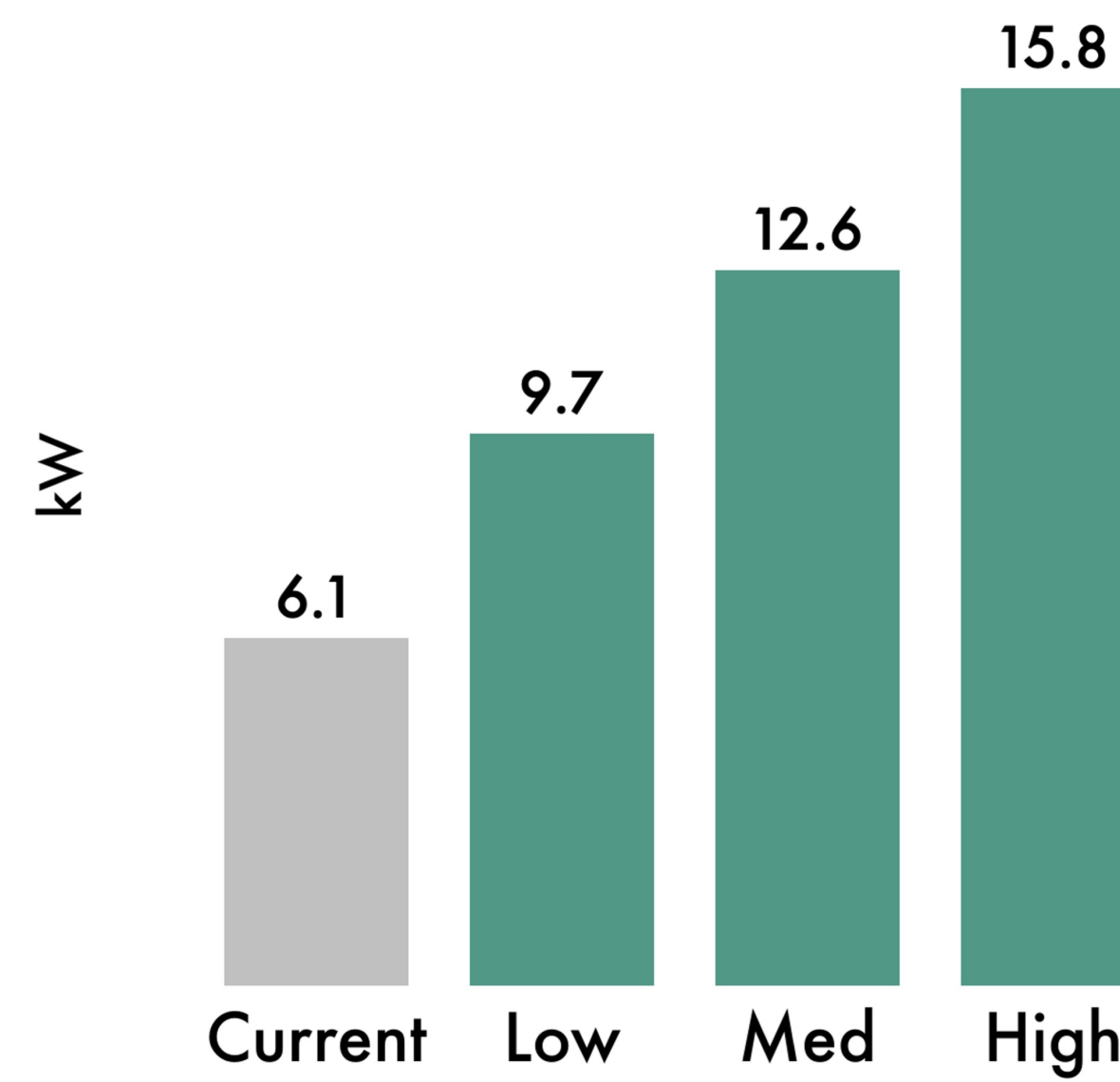
# Daily Average Charging Load Vs. Average ERCOT Price by Season



# Distribution of Maximum Charger Power Level



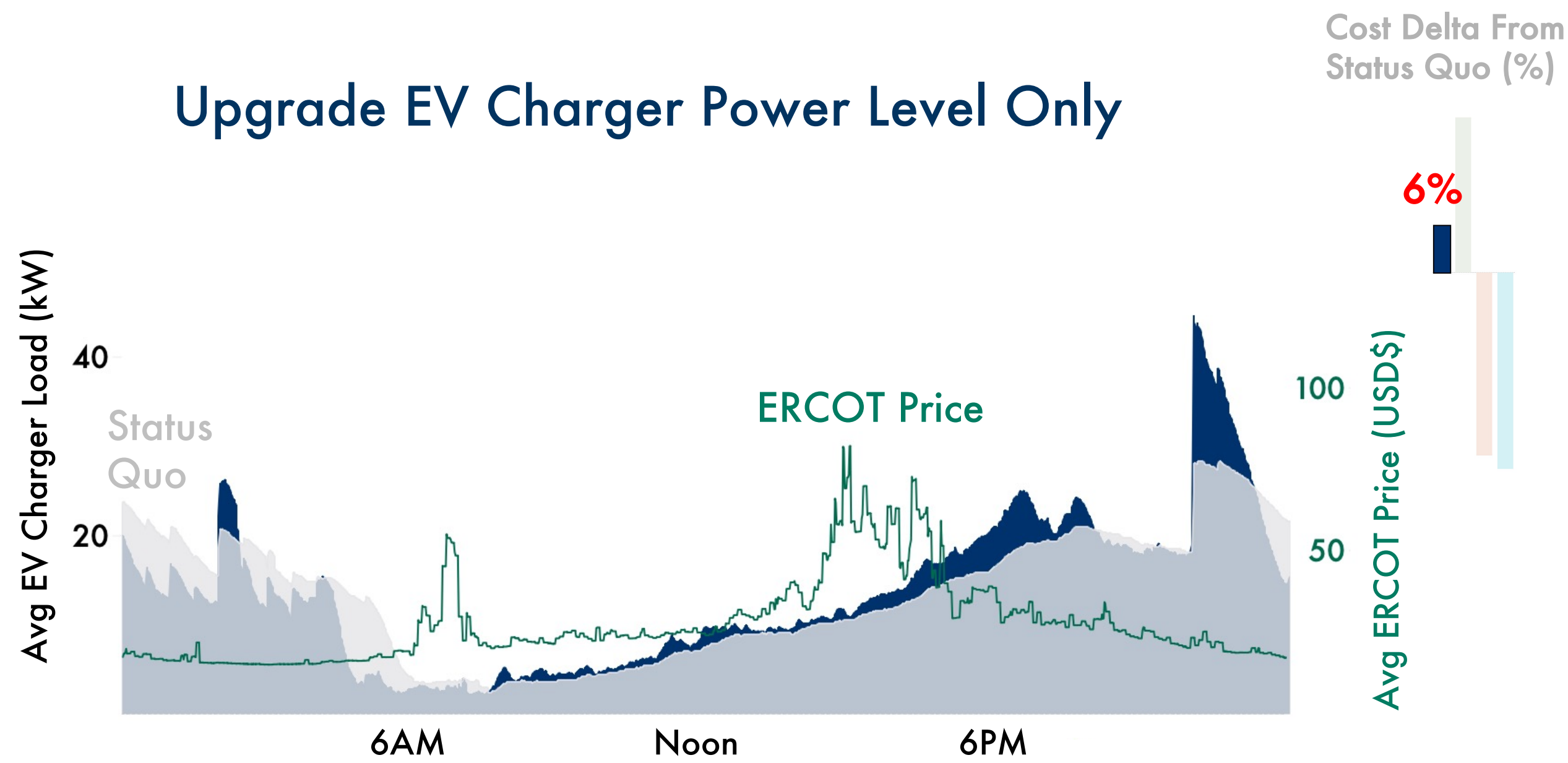
# Weighted Average of Maximum Charger Level



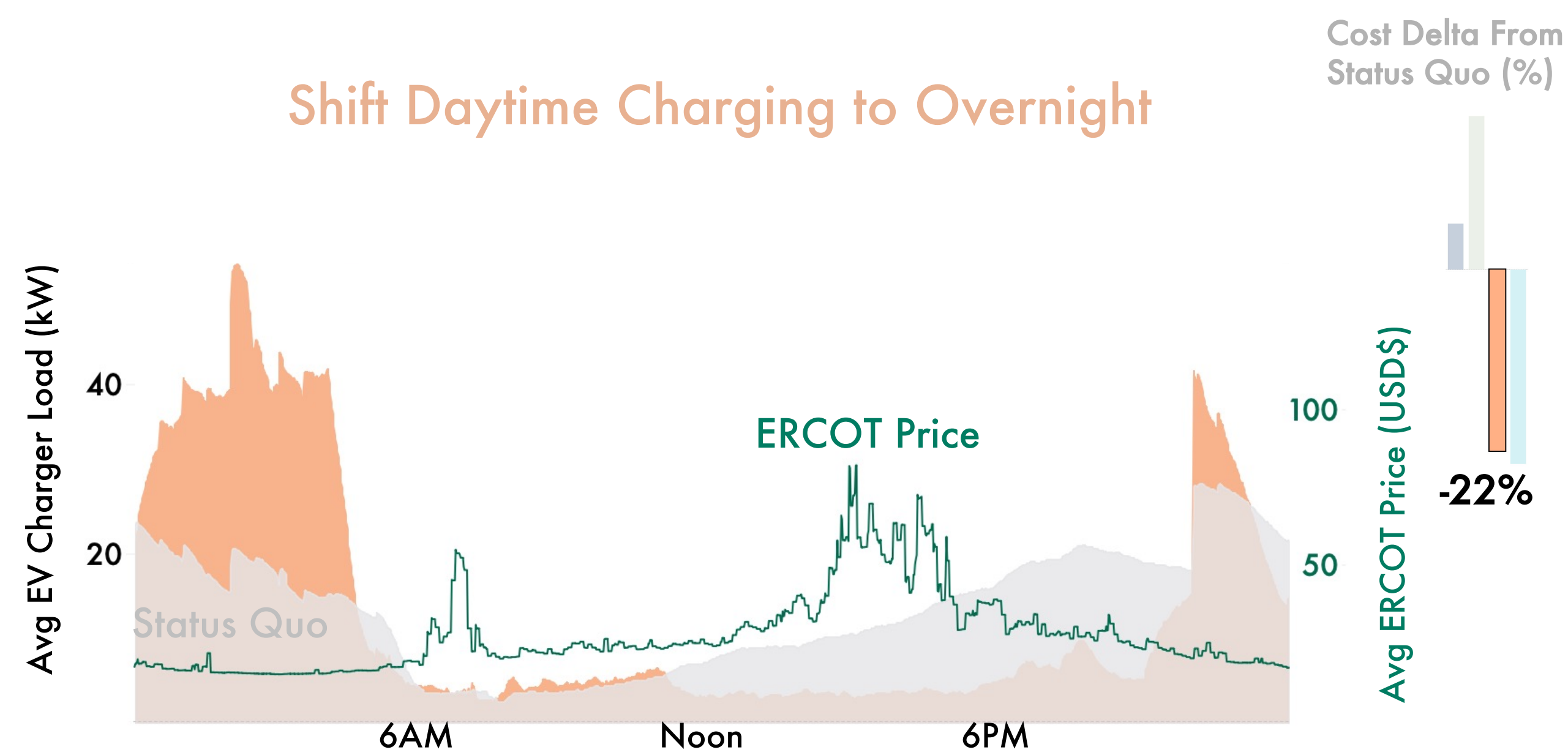


# Average Daily Charging Load vs Status Quo with ERCOT Price

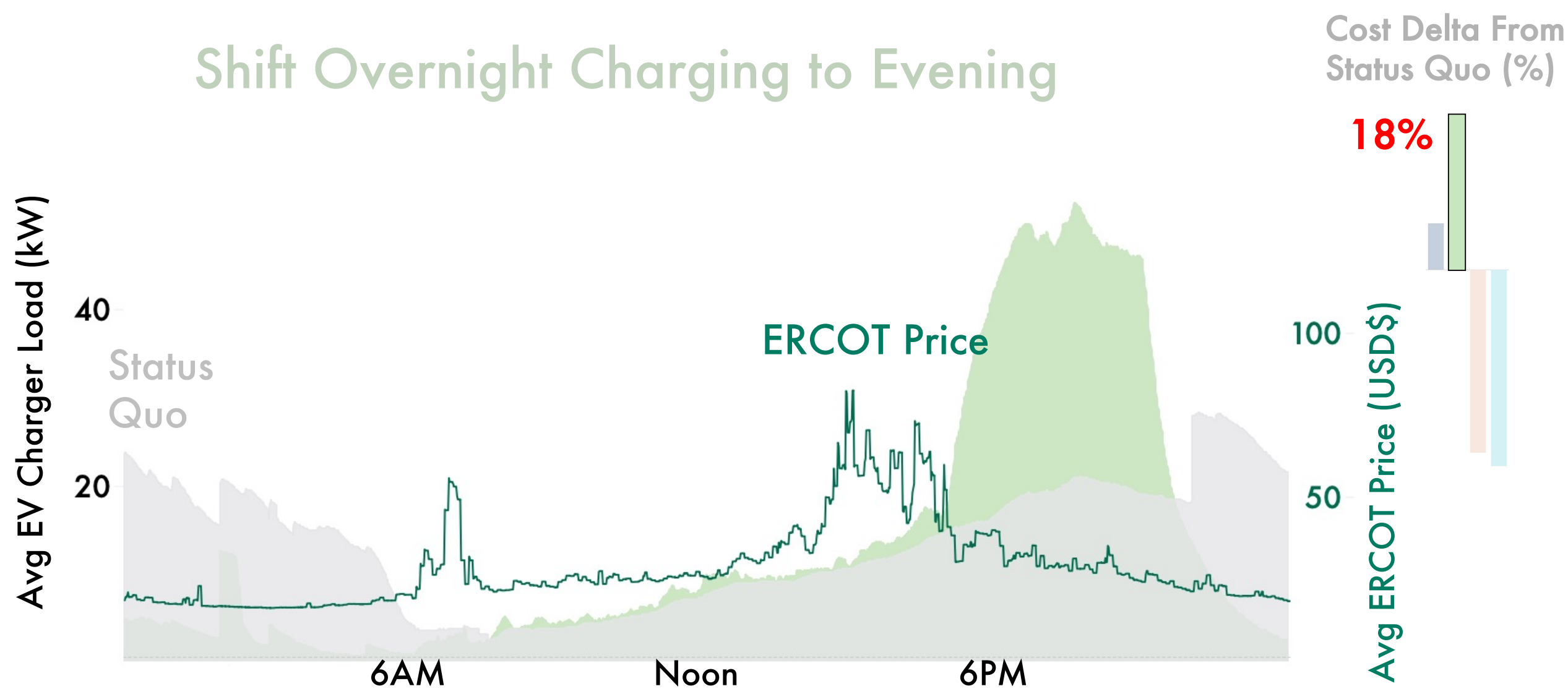
## Upgrade EV Charger Power Level Only



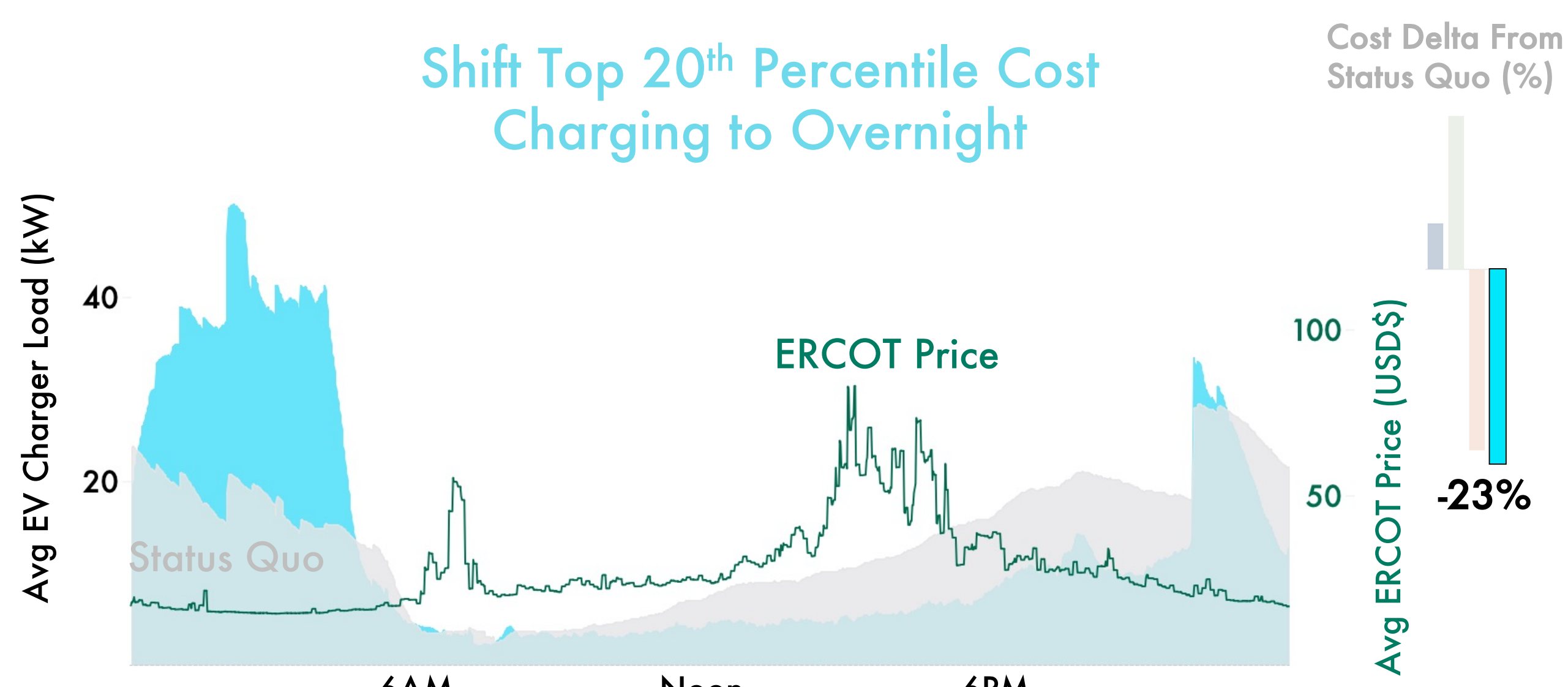
## Shift Daytime Charging to Overnight



## Shift Overnight Charging to Evening



## Shift Top 20<sup>th</sup> Percentile Cost Charging to Overnight

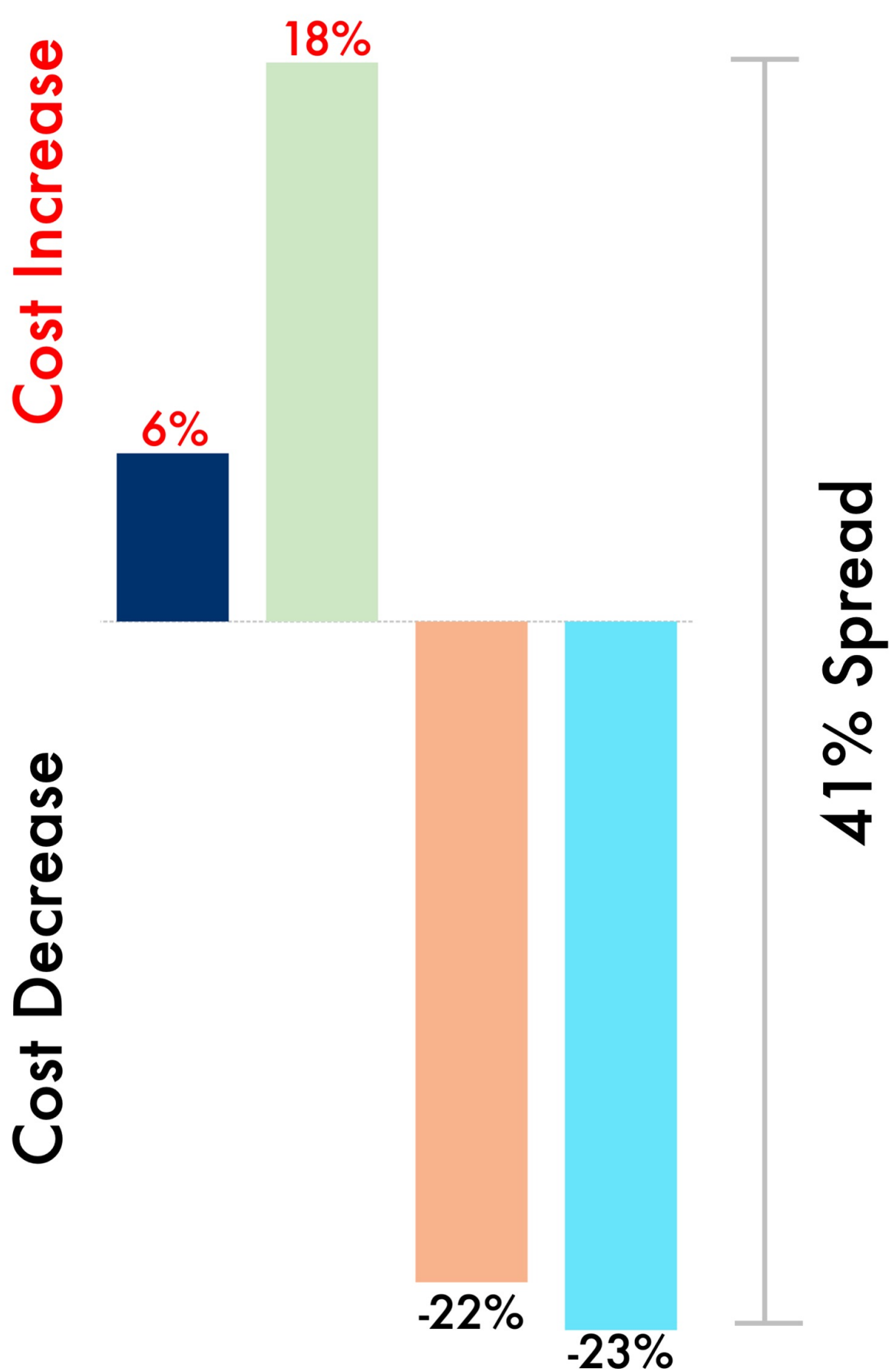
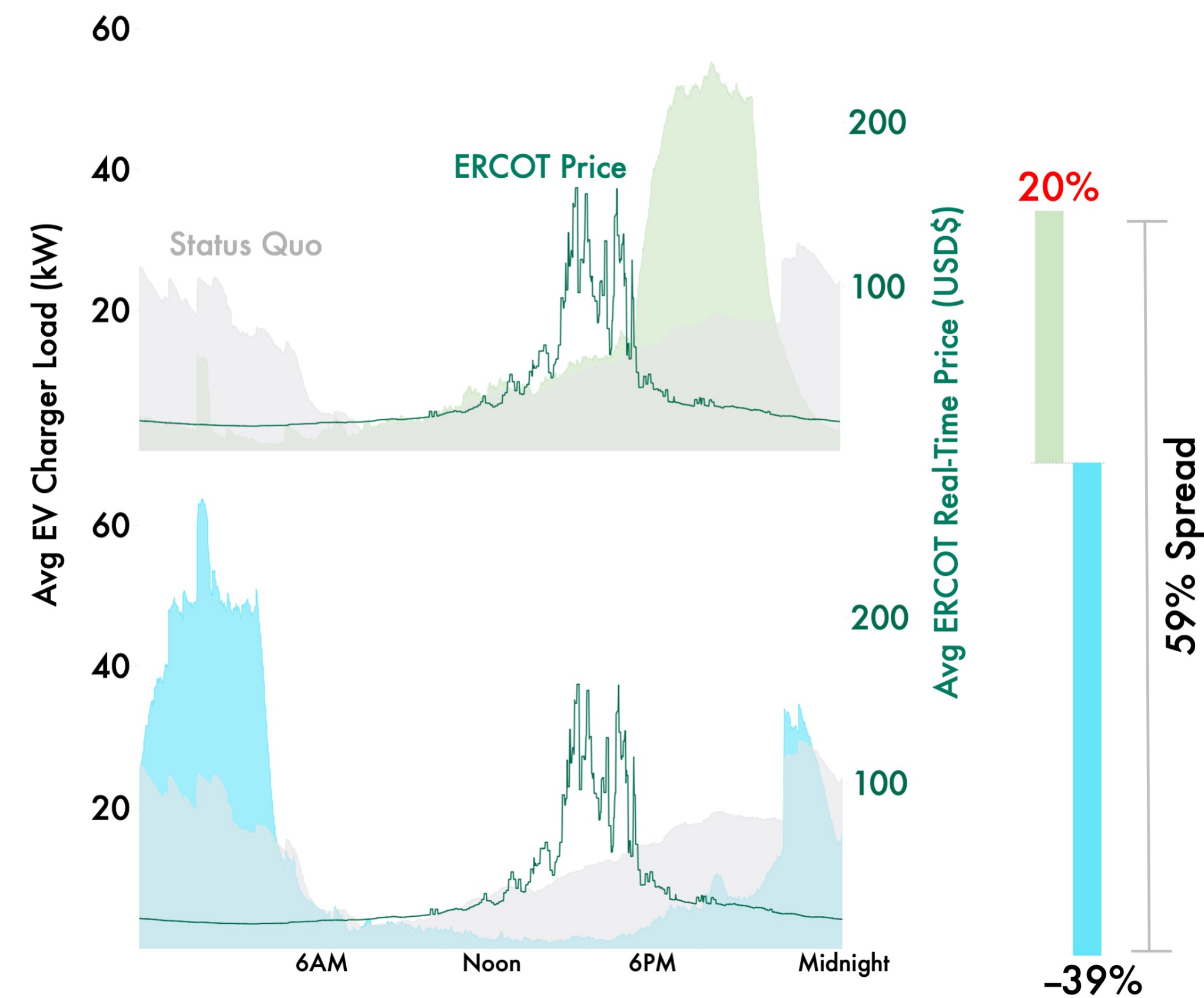




# Shifting Charging Patterns Impact Utility Costs

Summer Average Charging Load vs Status Quo

Scenario Cost Difference from Status Quo



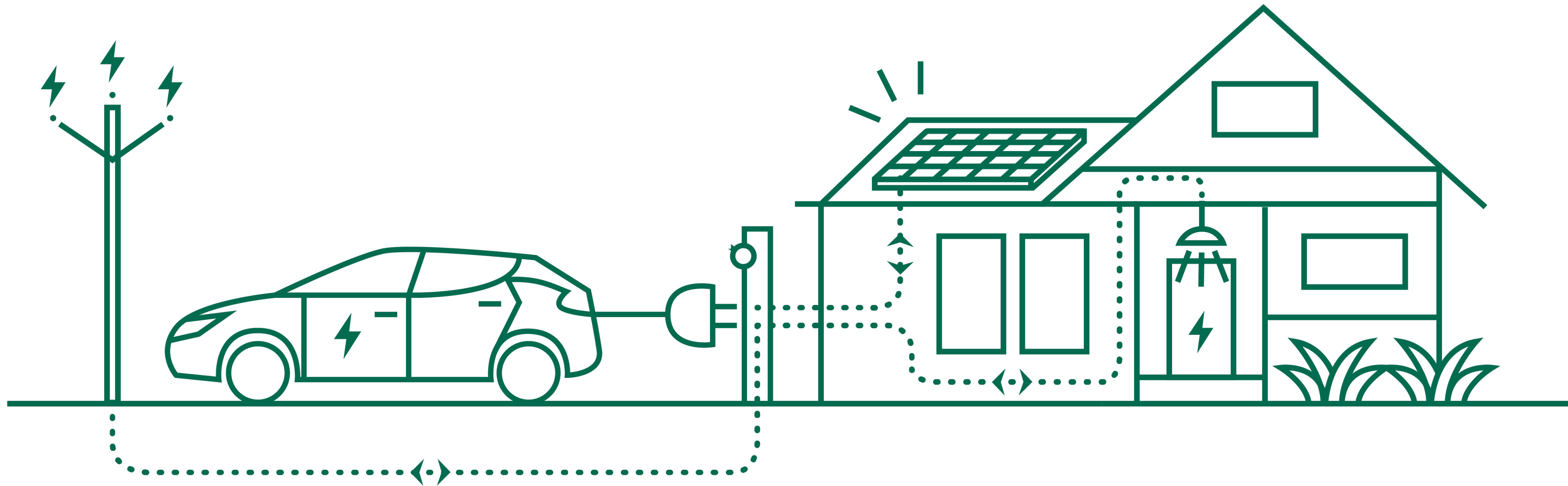


# Policy Recommendations

Utility Pricing Signals

Smart Charging Technologies

Consumer Education





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Thank You