ted

Technology Early Deployment
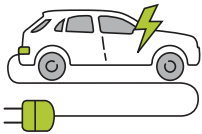
Xeal Energy

**DRIVER APP**

BUILDING MANAGER PLATFORM
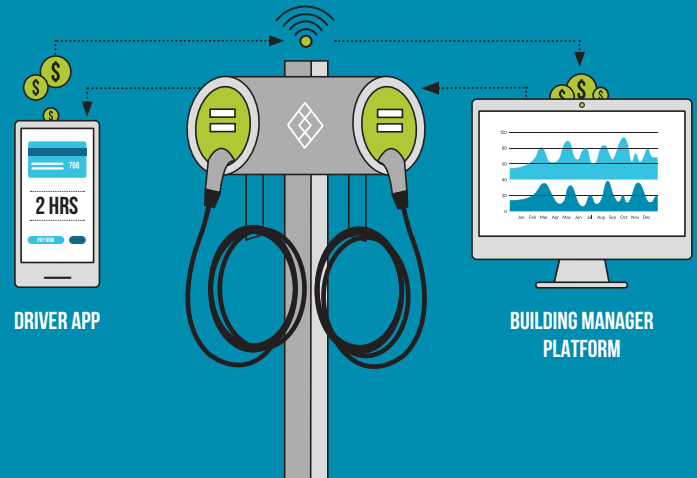
Xeal Energy is a **digital platform** for managing EV charging supply equipment (EVSE). The platform offers the ability to manage EV charging during peak demand periods, based on a building's historical profile, while improving ROI for building owners by providing a system for EV drivers to pay for EVSE. Utilization of EVSE is improved by allowing customers to reserve and pay for charging blocks through an app and additional fees can be applied for overstaying the reservation. Xeal Energy is compatible with most models of connected and non-connected EVSE. The technology has gained OCPP compliance and is expected to become OpenADR compatible in 2020.

TECHNOLOGY BENEFITS

INCREASE UTILIZATION
by helping drivers find, reserve and pay for EVSE.
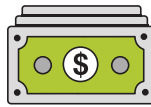
IMPROVE ROI
through flexible, demand-based pricing.

REDUCE LOAD
from EV charging during peak demand periods.

Disclaimer: Xeal Energy's Charging Management System was chosen for TED because it supports **California's clean energy goals** of GHG emissions reduction and demand flexibility. This document does not constitute or imply endorsement, recommendation, or favoring by EPRI or SCE of the product or company described herein. This publication is funded and administered by Southern California Edison's Emerging Technologies Program.
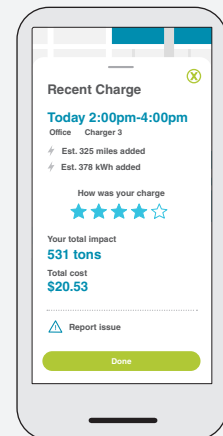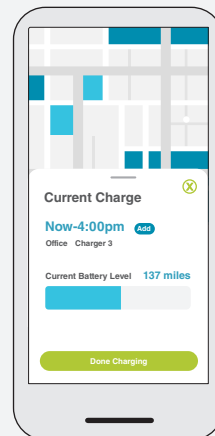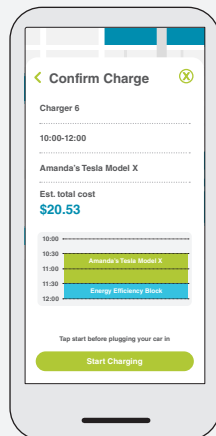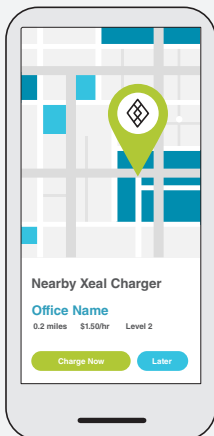
Building manager platform

Built on PRISM (Power Responsive Integrated Scheduling Model), the Xeal Building Manager Platform provides building owners with **three ways to reduce demand charging costs:**

1. Restrict charging capacity during predicted building peak periods (based on historical data

2. Charge EV drivers a self-determined fee for EVSE.

3. Utilize reservation requests to determine periods of high demand and charge demand fees for "hogging" EVSE after charging is completed.

Driver app

The Smartphone app optimizes charger usage by allowing drivers to:

1 Find available chargers.

2 Charge now or reserve for later.

3 Get live updates on battery percentages.

4 Make in-app payments and report issues.

Nearby Xeal Charger
Office Name
0.2 miles $1.50/hr   Level 2
Charge Now   Later

< Confirm Charge ⊗
Charger 6
10:00-12:00
Amanda's Tesla Model X
Est. total cost
$20.53
10:00
10:30   Amanda's Tesla Model X
11:00
11:30   Energy Efficiency Block
12:00
Tap start before plugging your car in
Start Charging

Current Charge ⊗
Now-4:00pm Add
Office   Charger 3
Current Battery Level   137 miles
Done Charging

Recent Charge ⊗
Today 2:00pm-4:00pm
Office   Charger 3
⚡ Est. 325 miles added
⚡ Est. 378 kWh added
How was your charge
★★★★☆
Your total impact
531 tons
Total cost
$20.53
⚠ Report issue
Done

TARGET CUSTOMERS

✓ Commercial building owners and operators.

✓ Multi-unit dwellings (MUD: apartments/condos) and workplaces.

✓ Retrofit or new construction.

✓ Utility companies for load management programs.

HARDWARE COMPATIBILITY

✓ Can integrate with both networked and non-communicating chargers.

✓ Early partners: ClipperCreek, EVOCharge.

✓ Integration testing with others.

✓ v2.0 now OCPP compliant and can communicate with 80% of EVs on the road.

✓ Battery SoC, diagnostics, energy mgmt.

✓ Integrated with AMI from 18 utilities.

SYSTEM FEATURES

ACCESS CONTROL

BILLING & PAYMENT PROCESSING

AUTOMATED ENERGY COST

ENERGY METERING

SMART SCHEDULING

CONTROL PARKING ENFORCEMENT

SESSION DATA RECORDING

LOAD MANAGEMENT

California's transportation electrification challenge

Accelerated widespread transportation electrification (SB 350) is a key strategy for meeting California's decarbonization goals. Add to this the 2020 Load Management Rulemaking (19-OIR-01) for increased demand flexibility, requiring demand response strategies are implemented to ensure that increased demand from EV charging does not overwhelm the system. But increasing adoption of EVs comes with a new set of challenges, including:

1.

Limited charging infrastructure

Both real and customer perception of limited infrastructure.
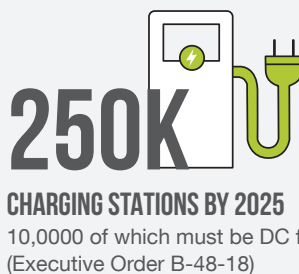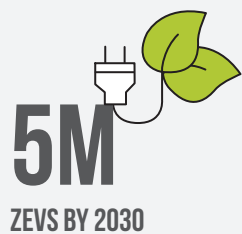
2.

Increased peak demand

Unmanaged charging could dramatically increase peak demand on the system.

3.

Market participation

Creating the charging infrastructure necessary to meet demand requires market participation.

CALIFORNIA DECARBONIZATION GOALS

5M

ZEVS BY 2030

250K

CHARGING STATIONS BY 2025

10,0000 of which must be DC fast chargers. (Executive Order B-48-18)

Addressing market barriers to expanding EV charging infrastructure

Commercial and multifamily buildings could provide a highly scalable path to creating the charging infrastructure necessary to meet growing EV adoption, but barriers to expansion exist in two key areas:

1. Low EVSE utilization due to lack of charger management

    ✔ Drivers must frequently check for open chargers or organize a charging rotation.

    ✔ Management sees empty chargers and assumes demand is low .

2. Low ROI creates a cost barrier that keeps building owners from adding EVSE

    ✔ High cost to upgrade electrical infrastructure.

    ✔ Increased demand charge and higher TOU rates.

The Xeal Energy Charge Management Platform and companion app address barriers for both property owners and EV drivers.

PROPERTY MANAGERS

✔ Reduces peak demand by limiting EVSE availability during predicted peak periods.

✔ Increases EVSE utilization through app engagement, scheduling, and idle fees.

✔ Maximizes ROI to building owners through reduced electricity costs and increased revenue from higher EVSE utilization.

EV DRIVERS

✔ Facilitates searching, reservations and payment through the Xeal App.

✔ Provides drivers with the choice to pay less for charging during off-peak times.

Market readiness

8-9

TECHNOLOGY
READINESS LEVEL
SCORE

> Independent case studies needed to verify peak demand reduction.

1YR

TIME TO
MARKET

> Launched product 2.0 in 2020 and seeking more efficient sales channels.

8-9

MANUFACTURER
READINESS
LEVEL SCORE

> Broader deployment needed to verify full-scale production capability.

1

KEY
OUTCOME

> 25% Reduction in demand charges from current efforts.

Supporting utility goals for EV adoption

Xeal Energy recently launched v2.0 of the platform, compliant with OCPP (Open Charge Point Protocol) 1.6J and is working to develop OpenADR 2.0b certified VEN for eligibility in utility programs. Demonstrations with Schneider Electric and Wayfarer apartments are complete and new applications have launched in Miami, FL at Blu27 Apartments and with commercial customers in Santa Ana, San Jose, Huntington Beach, CA.

SCHNEIDER ELECTRIC

With only two EV charging stations to support 20 EV driving employees, Schneider Electric needed an EVSE management system that would improve accessibility, optimize EVSE utilization and capitalize on high use periods.

OUTCOMES

50%
INCREASE
in EVSE utilization.

4X
INCREASE
in driver access.

WAYFARER APARTMENTS

Wayfarer had non-interconnected chargers with no method to recoup electric costs from drivers. Xeal Energy upgraded their chargers and brought in smart-pricing strategies, resulting in increased revenue and reduced demand charges.

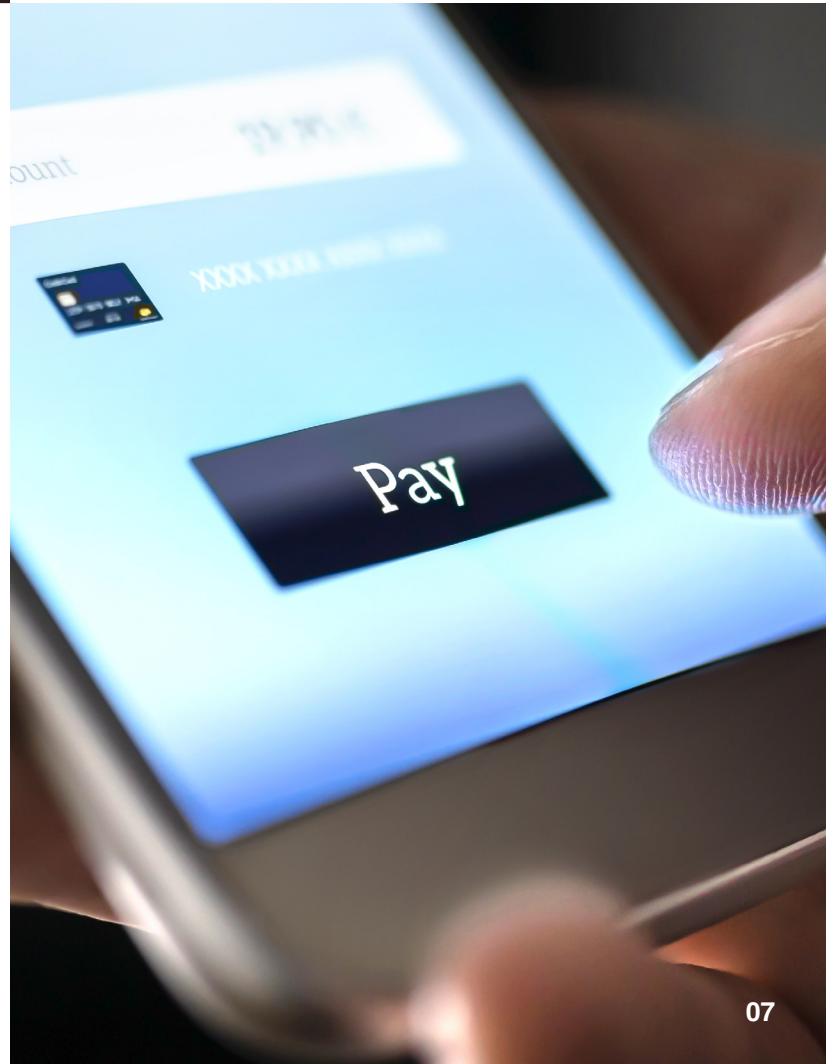#### OUTCOMES

$1,100
INCREASE
in revenue in
one month.

$500
DECREASE
per month in
demand charges.

25%
REDUCTION
in demand charges by
shifting to overnight
charging.

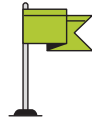**1-2**
MONTH
return on
investmen.

Xeal Utility Opportunity Assessment

TECHNOLOGY CATEGORY

1.
Electric Mobility

2.
Load Management

ETP PRIORITIES

TRANSPORTATION ELECTRIFICATION

Incentivizes investment in EVSE infrastructure for building owners.

DECARBONIZATION

Increases driver access to EVSE by incentivizing smart charging behaviors.

DEMAND FLEXIBILITY

Reduces peak demand by limiting charge capacity during predicted peak periods.

KNOWLEDGE INDEXES

TECHNICAL PERFORMANCE

Medium

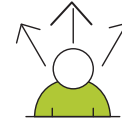### MARKET KNOWLEDGE

Medium

PROGRAM INTERVENTION

Medium

UTILITY VALUE

Demand Savings: 30% reduction in peak demand (not independently verified).

UTILITY TRAJECTORY

- EE Operations. (Energy Efficiency)
- Integrated DSM. (Demand Response)
- Transportation Electrification. (EV charging)
- Building Electrification.

OPPORTUNITIES

LEVERAGE POINTS

- Commercial partners: Schneider Electric, ClipperCreek.
- OCPP compliance
- Integrated AMI from 18 utilities.
- Only charge mgmt. platform with both EV diagnostics and building AMI.
- "Load Predictive Tool" could be expanded to manage non-EV loads in future.

MARKET SIZE

- Beach-head: enterprise property mgmt. group.
- SAM: 20k existing EVSE in workplaces and luxury apartments.
- TAM: 8M private chargers ($20B smart) in US by 2030.

BARRIERS

GAPS TO FILL

- OpenADR compliance for DR participation.
- Relies on WiFi or cellular data, requiring $10k+ upgrades where lacking (parking garages).

IN-PROGRESS

- OpenADR compliance testing.
- Moving to near-field communications (NFC) approach for complete offline smart charging.
- Brand awareness.

UPCOMING

- Hard to reach builders, developers, property management.
- Engage OEM partners

SOLUTION

- Use driver requests to add chargers to generate leads.

NEXT STEPS

COMPANY

- Utility-specific cost-benefit analysis.

CRITICAL ETP ACTIONS

- Socialize within SCE.
- Socialize with other IOUs.
- Field test in CA.

UTILITY

- Value proposition and business use case.

OTHER

- EPRI M&V testing and/or grant collaborator.
- Partnerships with developers, Building Energy Management Systems.

FOR MORE INFORMATION

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