

INCUBATENERGY LABS 2023 Demo Days

Powered by **FORTIS** INC.

November 1-2
Vancouver, BC
Canada



Quantifying EV charging
with meter data analytics



Optimizing EV charging
with dynamic pricing



INCUBATE ENERGY
LABS



- **Electric Vehicle adoption is accelerating**
 - Significant new load on the electrical grid
 - Risk of unplanned outages and costly upgrades
- **Time-of-Use pricing or traditional Demand Response not effective for EVs**
 - More flexibility and engagement required.
- **The magnitude of the problem is unknown**
 - Where are the EVs?
 - When do they charge?
 - How much electricity do they use?





\$2.8B

Cost for required grid upgrades to enable EVs – for one utility

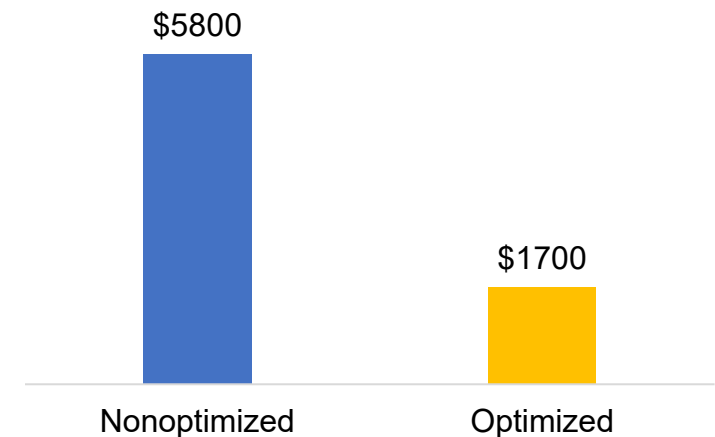
70%

Potential savings in grid upgrades with **Optimized** Charging

\$1.4T

Global savings potential through optimization— just to support EV adoption

Transmission and Distribution Investments Per EV



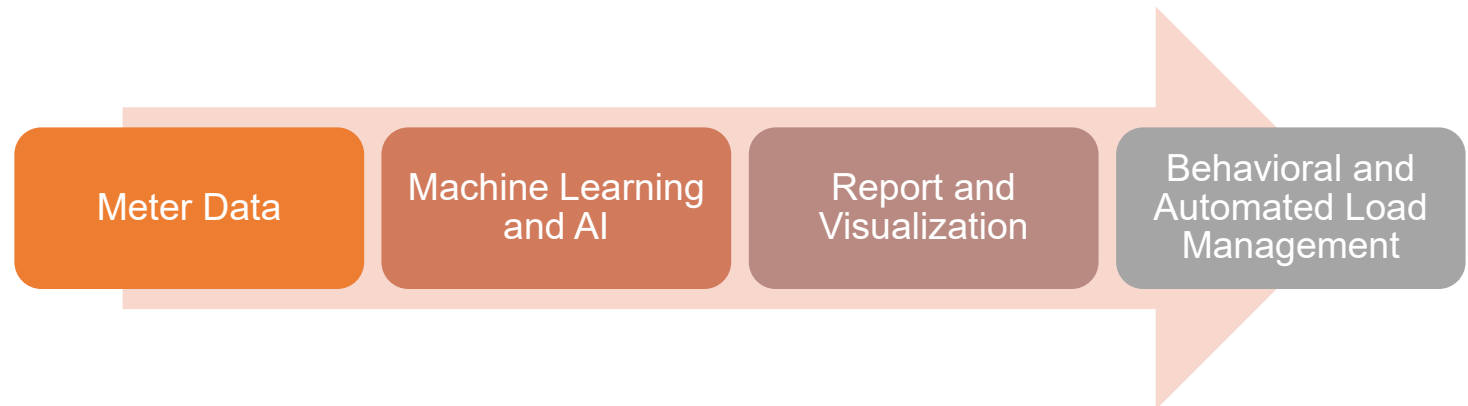


1. Quantify the problem

- Use the energy data utilities already have
- Determine location, timing, and magnitude of EV charging sessions from meter data

2. Manage the problem

- Optimize when power is used – through intelligent software
- Defer infrastructure upgrades



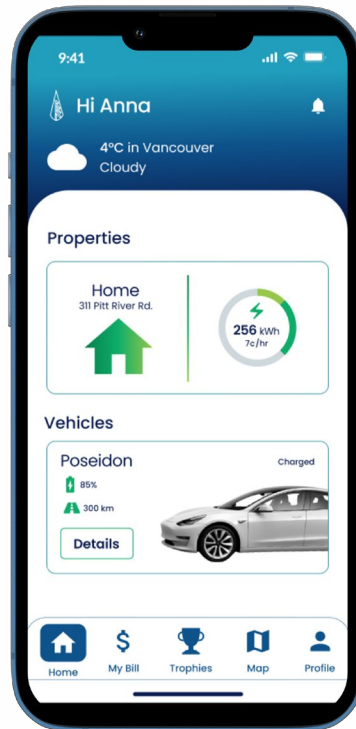
Our Solution: Grid Insights



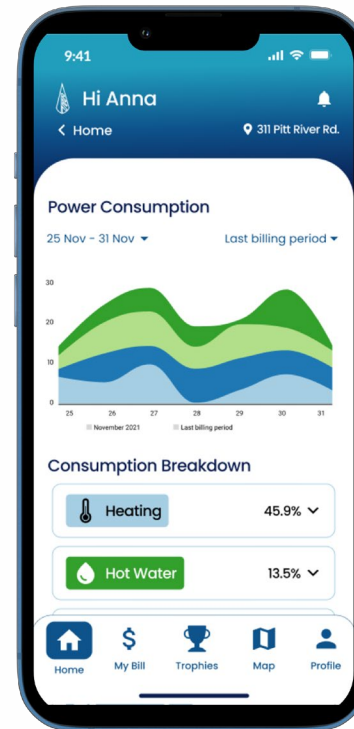
Uncover what is using how much power when – then target the problem

Our Solution: Energy Management

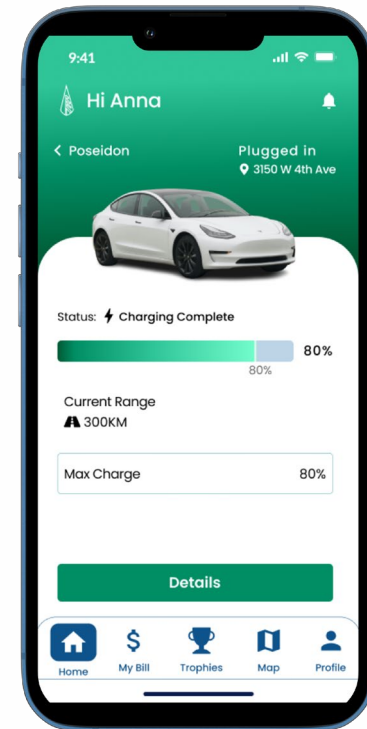
Automated



Insightful



Simple



Engage consumers, then automate **where** and **when** energy flows

The Pilots

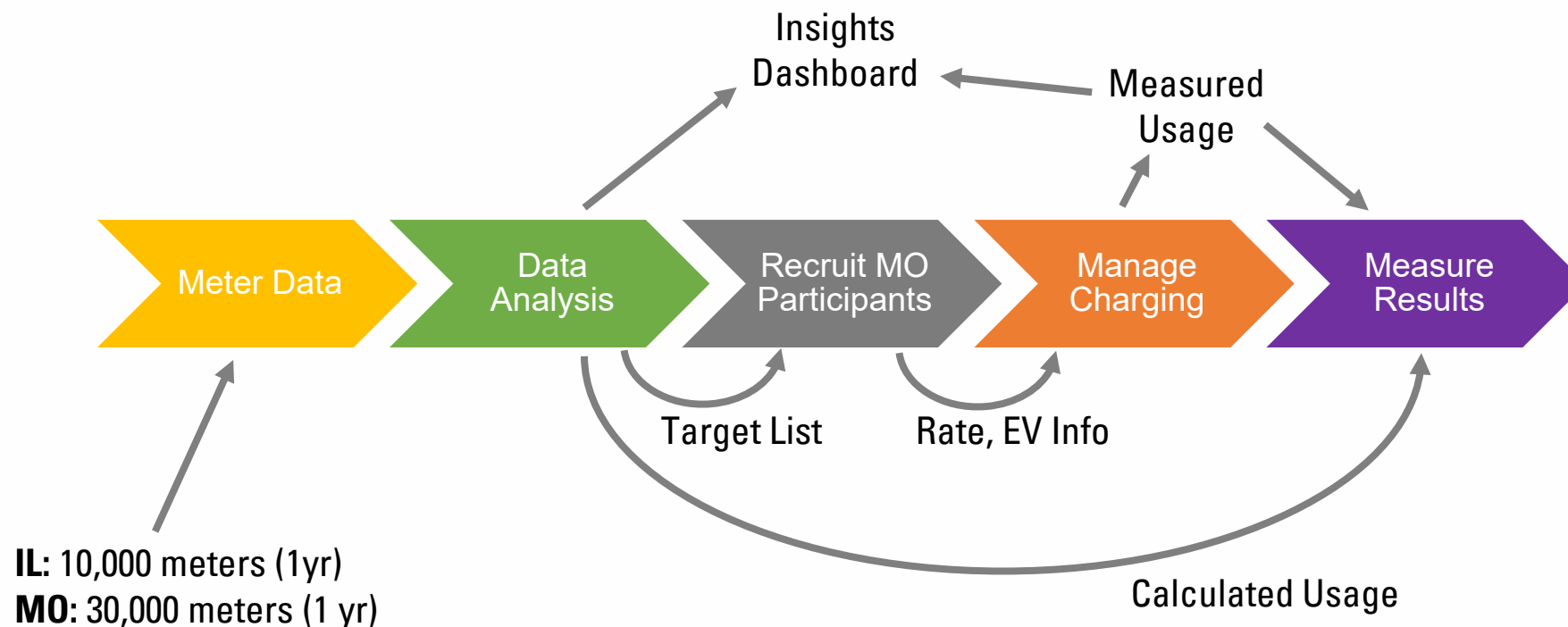




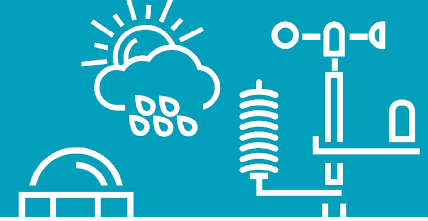
Pilot Overview



Quantifying EV charging with meter data analytics



TEAM



Dani Blackard
Innovation Analyst



Becky Whitman
Business Development Manager
Electric Vehicles & Charging



Chris Tumpach
CEO



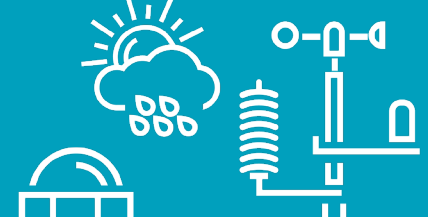
Bill Richardson
VP Marketing & Sales



Jackie Baum
Technical Leader
Microgrids & DERMS
Integration



Ben York
Manager
DER Strategic Projects



- Data analysis is under way
- Recruitment process developed and ready to deploy
 - Email content, link construct, landing page
- Custom app is complete
 - Just need app store release
- Applied to extend pilot
 - More participants for a longer time



Ameren Missouri is partnering with Rainforest to pilot a guided charging program. Thank you for participating! During the pilot, we'll partner with you while you conveniently charge your EV at home. When you get home, simply plug your vehicle in, and we'll do the rest! We'll ensure your vehicle is ready when you need it while also minimizing your impact on the grid.

Please fill out the form below to get started. Once you've submitted the form, follow the directions on the following page to download the Ameren EV app to your smart device.

Email

chris.tumpach@rainforestautomation.com

First Name

Your name

Create Password *

Your password

Home Address *

Address

Unit

Unit/Apartment

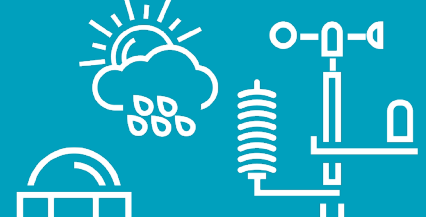
Utility Rate

Optional

Please select an address

☐ I agree to Rainforest's [Privacy Policy](#) and [End User Licence Agreement](#)

Join Program

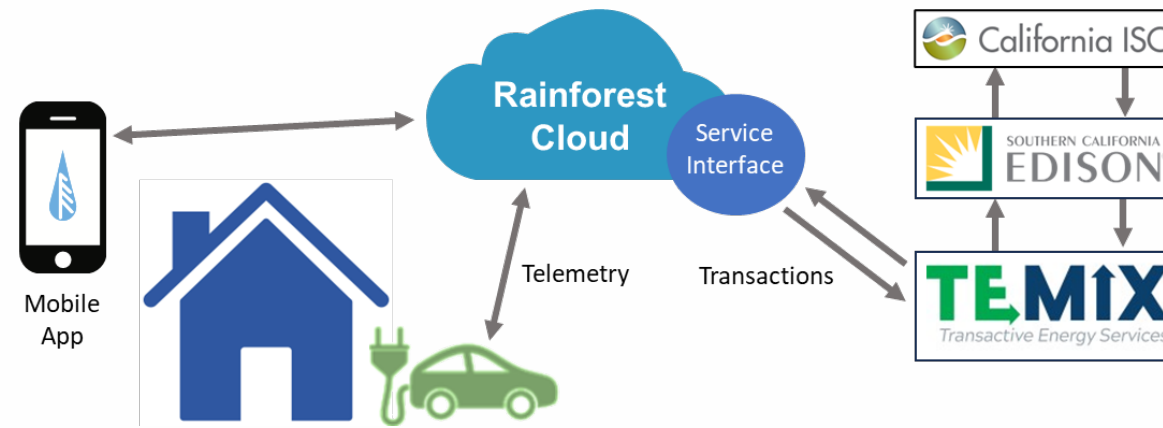


- Biggest barrier was getting approval to access data
 - Needs a transparent and standard process
 - Service Level Agreements
 - Fully anonymized data should have streamlined process
- Utility innovation teams and subject matter experts should be involved very early in the process
 - Keeps customer needs at forefront of program design
 - Prevents delays downstream



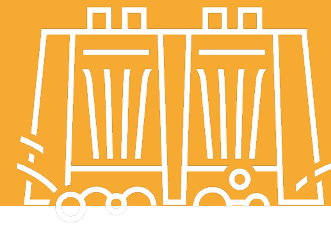
Pilot Overview

Optimizing EV charging with *localized* dynamic pricing



- Develop interface between Rainforest Platform and TeMix dynamic pricing platform.
- Recruit EV users to participate in managed charging using customized app.
- Provide charge management to participants and gather feedback and transactional data.
- Assess economics and use cases for future scalability.

TEAM



Mark S. Martinez
Senior Portfolio Manager
Emerging Markets and
Technology Program



Blake Heidenreich
Strategic Advisor
eMobility Strategy &
Program Development



Chris Tumpach
CEO



Bill Richardson
VP Marketing & Sales



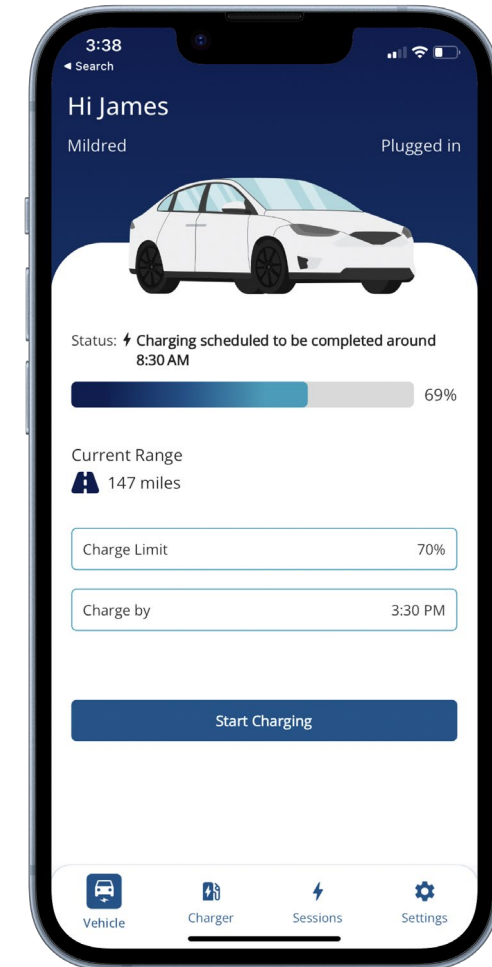
Jackie Baum
Technical Leader
Microgrids & DERMS
Integration



Ben York
Manager
DER Strategic Projects



- TeMix interface built
- Recruitment process developed and ready to deploy
 - Email content, link construct, landing page
 - TeMix onboarding redesigned
- Custom app is complete
 - Deployed to SCE employees
- Applied to extend pilot
 - More participants for a longer time = more data
 - Broader range of EVs (only Tesla now)
 - Improved data interchange with TeMix and SCE
 - Phase in of dynamic pricing





- **Need to get the right people onboard – early**
 - Needed the EV group to access pool of potential participants
 - Needed approval for incentives
 - Doing a project through the summer means vacations take key people out of the loop
- **C&I systems do not scale for residential participants**
 - TeMix manual registration with spreadsheets does not work for consumers
- **Backend and billing system processes need more time**
 - SCE pilot team currently working with billing team on shadow bills

What's Next?



- Our pilots with Ameren and SCE expand (pending approval)
 - Grow number of participants and length of study
 - Enhance functionality of Utility Insights Dashboard
 - Add EVSE monitor/control to existing telemetry-based management
 - Extend support to broader range of EVs
 - Expand scope of meter data analytics
 - Add transformer data to see distribution network impacts
 - Other loads: heat pumps, water heaters, baseboard heaters
- We welcome discussions with observing utilities



ENERGY PROVIDERS





a u t o m a t i o n

Chris Tumpach

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