

ET Summit 2022

Presented by



Automated Energy Price Communication for Optimized Load Management

PG&E Digital Rates Study

Connected devices have been touted as a solution to grid load management challenges. A recurring theme has been about how to convey information to participating connected devices from utilities, such as a customer's energy price. The Residential Digital Rates Study represents one such method PG&E can use to transmit the data, in this case in the form of the "True Price". This presentation describes the goals and objectives of the Digital Rates Study and provides an overview of the infrastructure and the challenges faced by implementers.

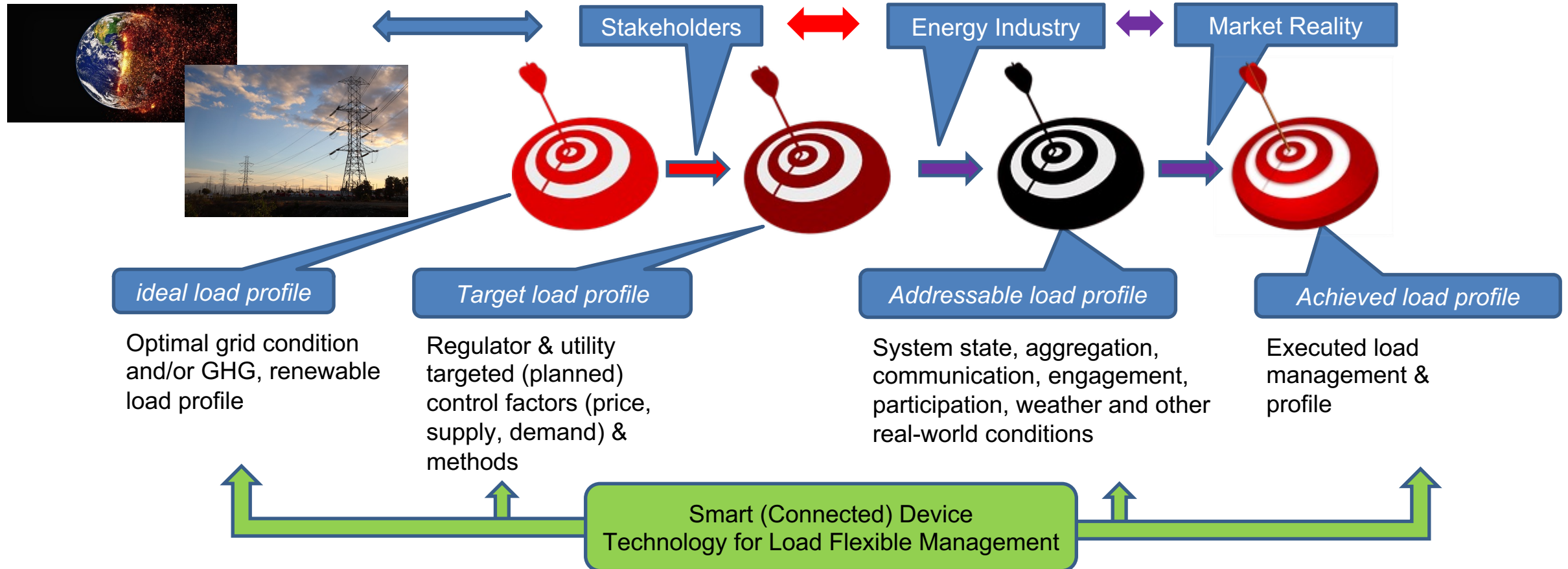
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Price-Driven Automated Load Management

Shift from Targeted-to-Achieved towards Ideal-to-Achieved load profile



Images from pixabay.com

Achieve Price-Driven Automated Load Management

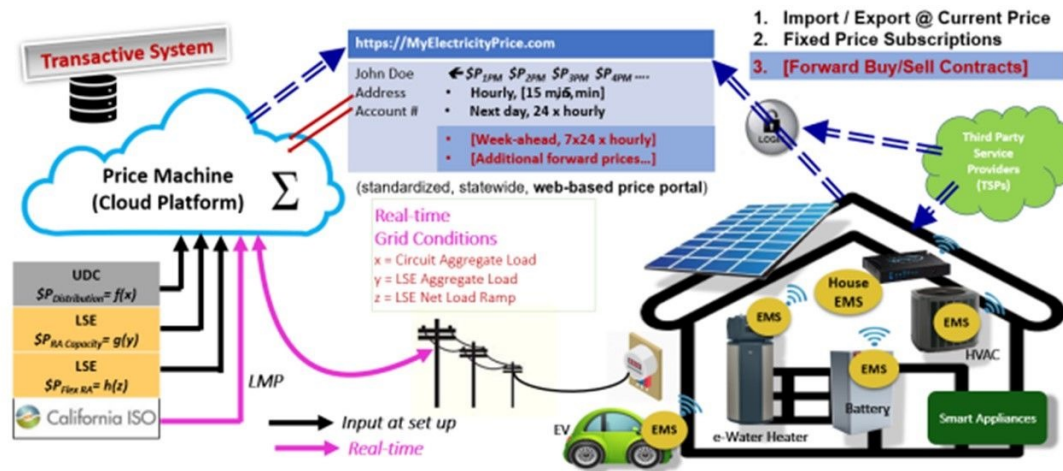
Regulators: RTP-based load management

DRET Digital Rates Study

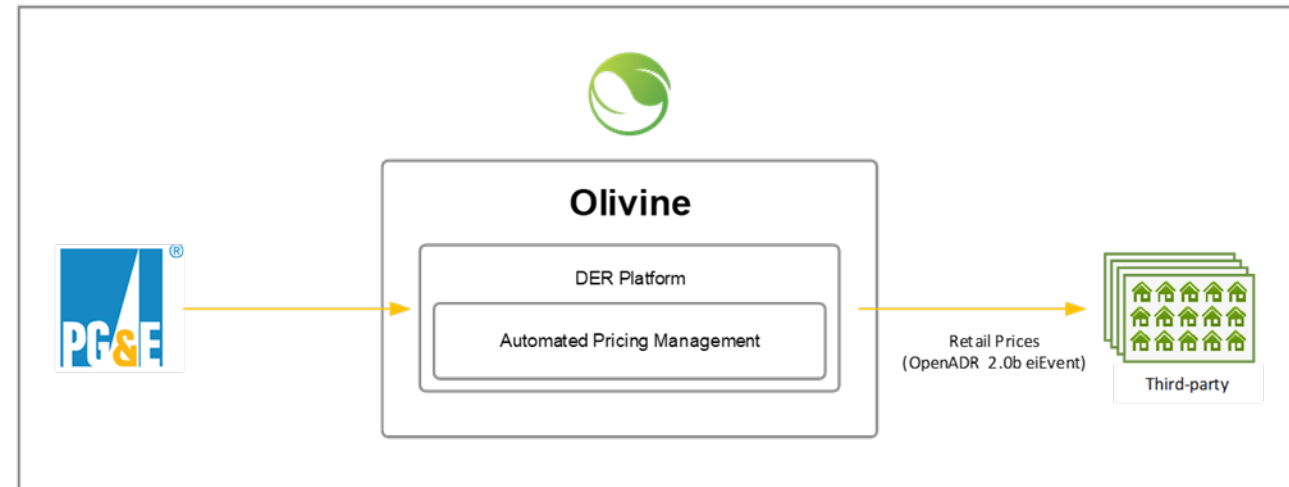
Proposed Infrastructure

Infrastructure Upgrade w/ "True Price" for legacy rates (current residential)

Illustration of the CalFUSE Framework



(from the CPUC Energy Division White Paper and Staff Proposal)



Learnings from Precedence

Past Lessons


- CPUC-mandated HAN architecture enablement
- IOU-enabled Smart Meters for HAN
- HAN was not coupled with any programs
- HAN vendors tried consumer motivated EE, BTM load management
- Business models failed and HAN vendors abandoned the market
- Green Button Connect has been successful method for data access
- AutoDR/OpenADR has been effective communication method to vendors



Digital Rates Study

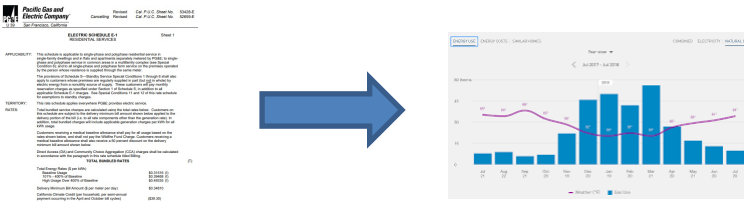
- Let vendors establish business model for Smart Devices outside of load management / energy
- Let vendors determine market use case for Smart Device adoption
- IOU provides customized price signals with established methods; use existing communication pathways and technologies
- Let's study the result and LEARN before spending ratepayer dollars
- Let vendors LEVERAGE price signal

Real-Time "True Price" Signal for Individual Service Agreements



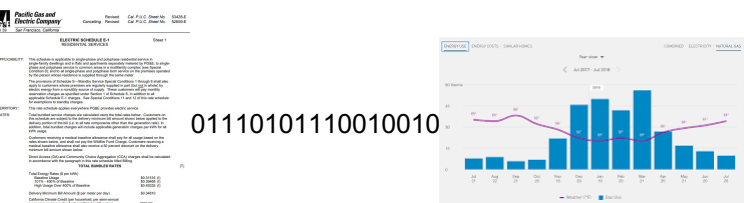
Residential Electric Service Agreement

Residential Rate Schedule applied to Electrical Usage (load)



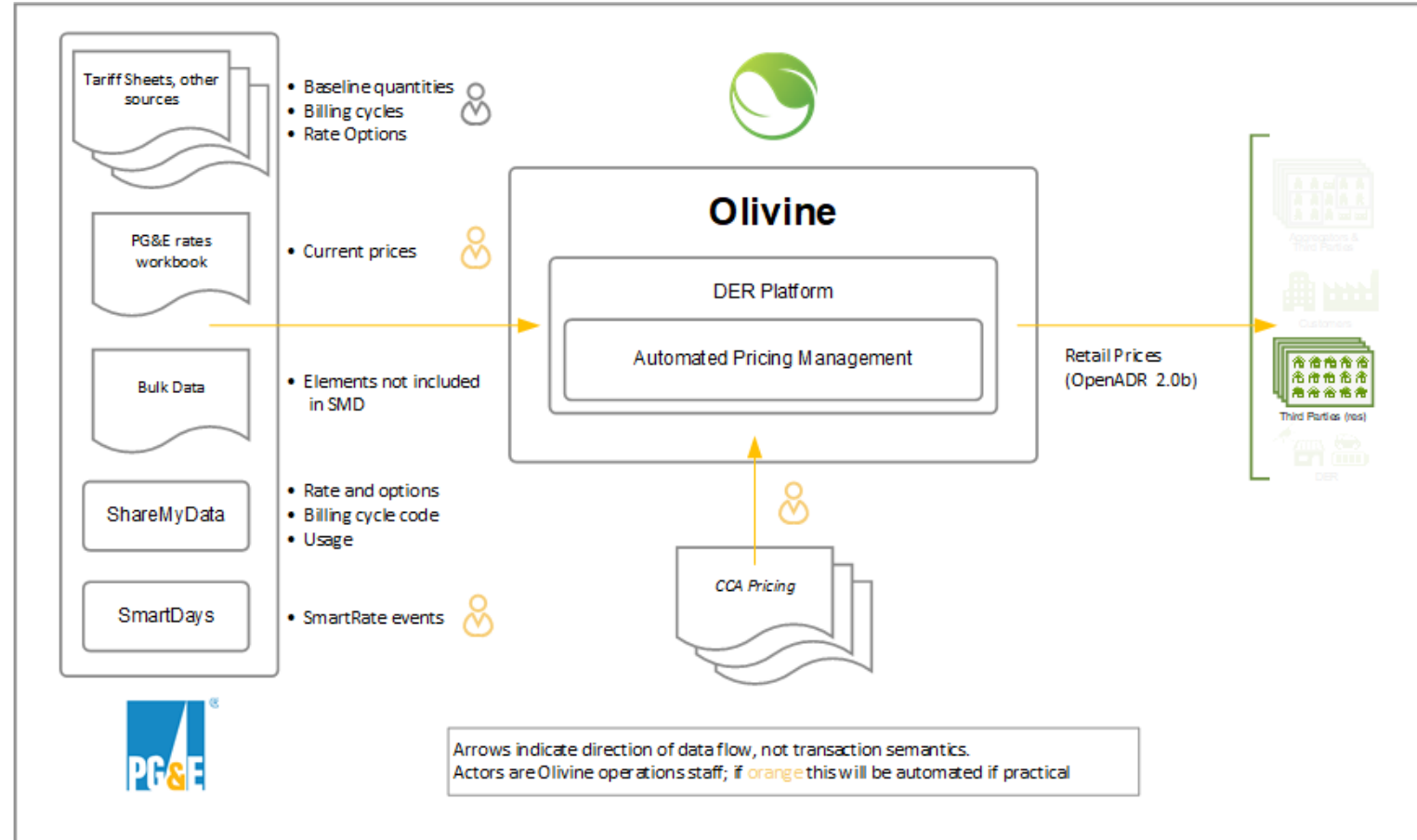
Convert Rate Schedule into TIMELY Machine-readable PRICE information

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Price for Billing

Price for Billing & Load Management



Real Time Pricing vs. Real Time “True Price”

Real Time Pricing (RTP)

- Match supply & demand by informing the price of energy in real-time
- RTP is a value that conveys supply conditions to demand-side by way of PRICE based on real-time distribution costs
- **Objective: Effect loads in real time based on supply conditions**
- **Build new RTP rates and communication infrastructure**

Digital Rates Real Time “True Price”

- The price that a consumer/LOAD is exposed to at any instance
- Price is derived from existing Rates (residential)
- “True Price” can be calculated for any RATE schedule, but would generally be unnecessary for RTP.
- **Objective: Manage loads real time based on effective (demand-based) PRICE (TOU, baseline tiers, etc.)**
- **Use existing utility systems and technology paradigms**

Challenges

Low third-party interest & participation

Hosted multiple webinars promoting the study

Just 3 third-parties ultimately responded

Even with high level of technical sophistication, new use of established technology still takes effort/resources

Why?

Same
as HAN

Calculating true rate & true price requires customer data and therefore customer authorization

Many interested parties do not support both Green Button Connect AND OpenADR 2.0b

Business Model is UNCLEAR: Much interest. Participating vendors have to bring their CUSTOMER BASE. Typically, program tie-ins mean Utilities bring CUSTOMERS so Business Value is clearer

Third-parties lack resources to support required R&D for utilizing prices

Costly to implement technology and supporting business processes anew

Pacific Gas and Electric Company DRET DIGITAL RATES STUDY

**Start of Implementation by vendor scheduled for 2023. Study report
planned at end of 2023.**

This project was funded by the California Emerging Technologies Program.

For more information, contact John Lin at john.lin2@pge.com.