

Real Time Pricing Lessons Learned and PG&E New Hourly Flex Pricing Pilots

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Robert Kasman



Together, Building
a Better California



RTP CUSTOMER RESEARCH

- RTP customer research adopted in D.22-08-022 to obtain residential, small business, agricultural, and large C&I customer input into PG&E's roadmap for dynamic rates
- Budget: \$700K
- 10 focus groups (4 Res, 4 SMB, 2 Ag)
- Online Conjoint survey
 - Residential N=2020, 6.6% complete rate
 - Non-Residential N=889, 5.8% complete rate
- 24 Large C&I Interviews
- Completed Summer 2023



6 ATTRIBUTES INCLUDING RATE TYPE TESTED IN THE RESEARCH

Attribute	Levels	Short Description
Rate Type (Rate Option / Rate Plan)	<ul style="list-style-type: none"> o Time-of-Use o Time-of-Use + Grid Stress (two levels of adder from 5-8pm) o Day Type Hourly Pricing (7 predetermined 24 hour price curves) o Real Time Hourly Pricing (based on PG&E's DAHRTP design) 	Rate Plan: when and how prices differ
Price Peakiness (magnitude of price variation)	<ul style="list-style-type: none"> o Low (same variation as PG&E's DAHRTP) o Medium (multiplier of 1.5) o High (multiplier of 2) 	Displayed as "Estimated range of bill change". Note: Medium-High peakiness simulates adding T&D or marginal cost multipliers, resulting in up to double the time differentiation
Bill Stability Options	<ul style="list-style-type: none"> o None o Budget Billing o Limited Exposure (reflects LBNL 2-part subscription RTP) 	Bill Stability Options: options for avoiding bill swings
Bill Protection	<ul style="list-style-type: none"> o No bill protection o Include bill protection 	Bill Protection: try the new rate risk free for the first year
Price Response & Automation	<ul style="list-style-type: none"> o Limited usage shift o Moderate usage shift o Modest automated response o Substantial automated response 	Price Response & Automation: how you will change your usage in response to high price times
Support	<ul style="list-style-type: none"> o Self-managed (no additional support) o Utility / energy provider assisted o 3rd party assisted 	Support: services to help you implement your usage and shifting preferences

Respondent was shown longer descriptions with even more details, pre-conjoint. Short descriptions were available for reference during the conjoint



CONCLUSION: STEPPING STONES NEEDED TO LEAD TO RTP

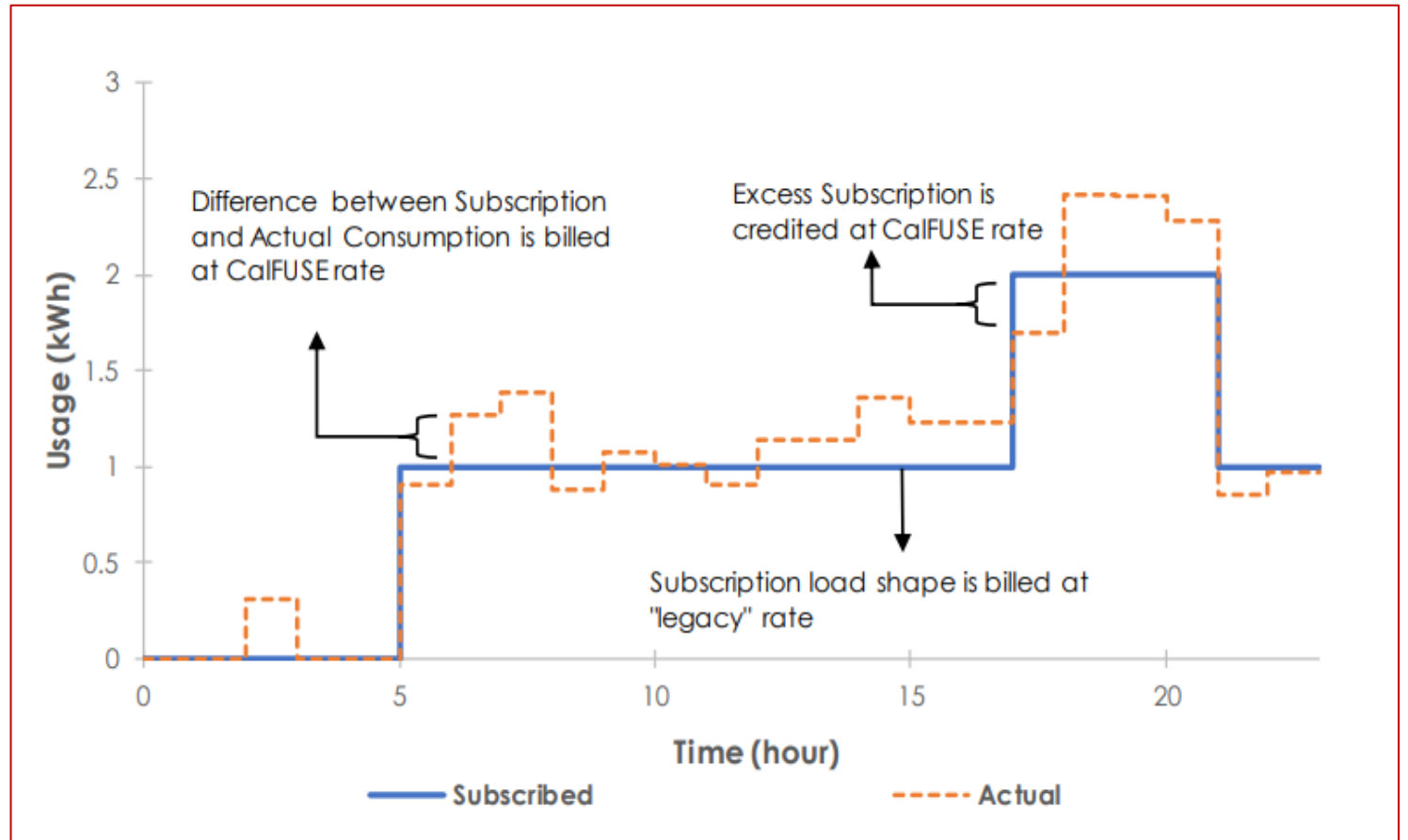
- Very small subset of respondents are open to hourly RTP, stepping stones needed to move customers towards RTP
 - Respondents on TOU and especially DR are somewhat more open to RTP
 - Most respondents have strong preference for TOU + Grid Stress over hourly rates, especially SMB
- Target dynamic price offerings to get most bang for the buck
 - Most likely adopters already on TOU / DR
 - Customers that can provide the most load shift: those with energy storage or EVs
- Respondents are open to automation technology but not to automated response
 - Significant investment needed to bring customer along (1. comfort with tech, 2.comfort with automation) and develop meaningful automated response by customers
 - Ag seems to be the most open to this



AgFIT Pilot Lessons Learned: Enrollment can be challenging

- High customer touch needed for enrollment
- Bill credits interesting, but...
- Automation incentives have been critical to enrollment
- Bill protection helps
- Several customers currently enrolled

- Subscription has been confusing to customers
- The price you see may not be the price you pay





AgFIT Pilot Lessons Learned: Shadow billing can be challenging

- Shadow billing requires development of a complete billing system
- Customers continue to pay regular Otherwise Applicable Tariff (OAT) bill
- Shadow bill shows charges under RTP rate, and difference with OAT

Large data sets *and* multiple data sources for forecasts, prices and components, subscriptions, transactions, interval usage

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Significant data “crunch” needed

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Timely Shadow Billing can be challenging to implement and validate

- Multiple data sources and vendors adds complexity



AgFIT Lessons Learned: Bill protection was significant for some customers

- For 2023 season all participants were happy to receive bill credits
- Ranged from 5% - 29% of OAT
- Bill protection was a factor for *more than a third* of enrolled service accounts (I.e., RTP bill > OAT bill, a “negative credit”)
- Without bill protection, would have eliminated or significantly reduced credits to some customers
- The reasons for negative credits on some service accounts (which customers did not need to pay) are unclear, but warrant further investigation

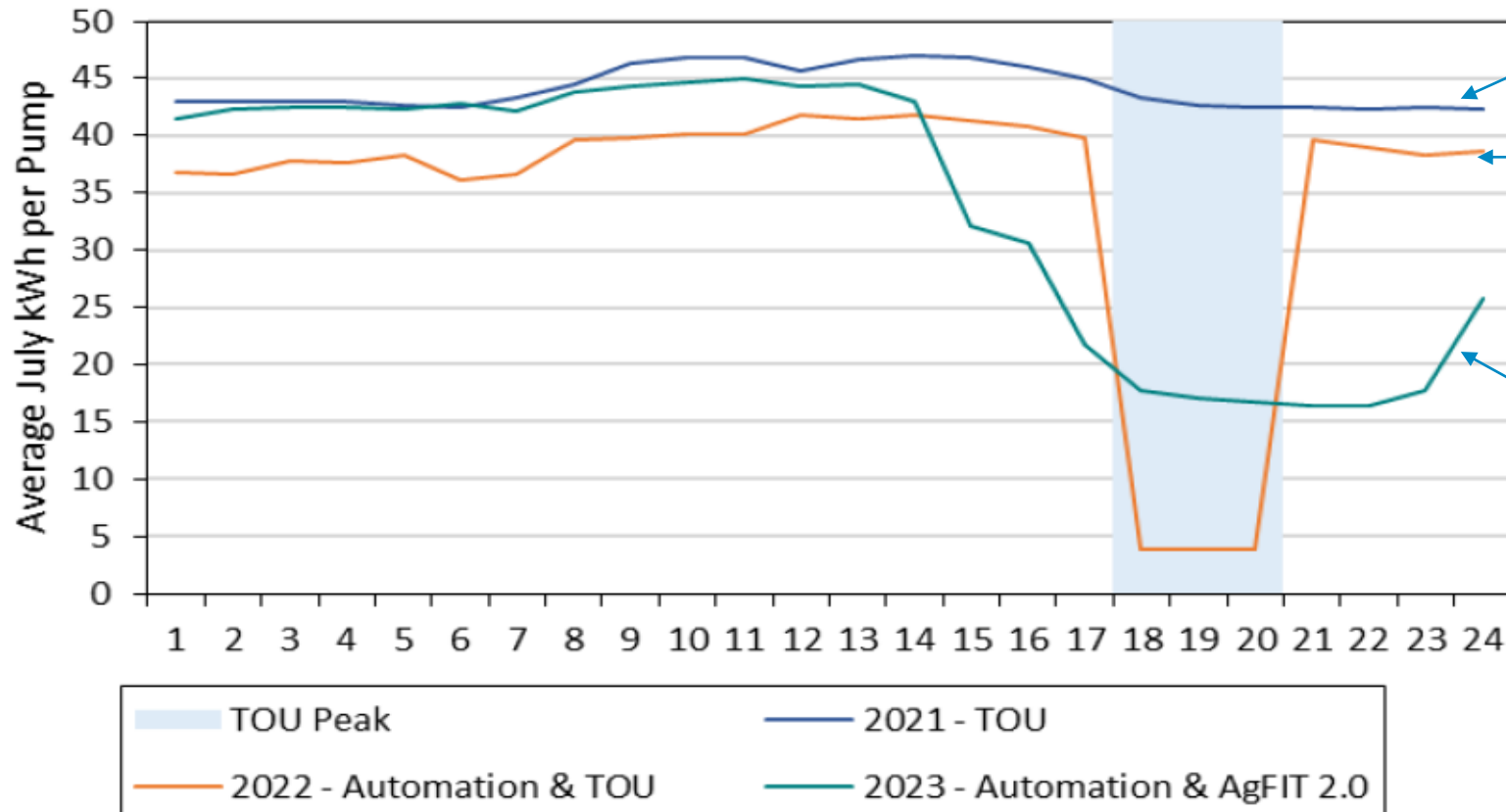


AgFIT Lessons Learned: Shadow bills and “bill credits” can be challenging to interpret

- Yes, customers continue to pay regular (OAT) bill
- Yes, customers have bill protection
- However... when customers shift load, affects *both* OAT bill *and* RTP shadow bill
- Therefore, whether a customer receives a bill credit may not be an accurate indicator of customer “savings”
 - Bill credit = (OAT bill) – (RTP bill)

AgFIT Lessons Learned: Automation Equipment Can Impact Load Shift under both TOU and RTP

Figure 16: Automation and Pricing Regime Usage, C-001



Before automation, flat usage

After automation, responsive to TOU rates





After automation and dynamic prices, responsive to broader time period of high rates

- Since automation equipment and RTP were implemented simultaneously, challenging to determine load impacts of each



PG&E New Real Time Pricing Pilots

PG&E has a ~\$50M portfolio of RTP rates that will be evaluating program and rate design elements.

Pilot	Vehicle to Everything	Hourly Flex Pricing for Agricultural Customers	Hourly Flex Pricing for Res/Commercial Customers
Target Use Cases	Vehicle to Grid (V2G) 	 Water Pumps/Sanitation, Electric Tractors, other Ag	 Box stores, industrial, Smart EV charging (V1G), BTM Batteries, <u>TBD</u> 
Timeline	Sept '24 - '25	June '24 – Dec '27	June '24 – Dec '27
Budget and Cost Recovery	\$13M	\$21.5M 2027 GRC Phase 1 (Filing 6/2025)	\$15.2M 2027 GRC Phase 1 (Filing 6/2025)
Goals	1,000 Residential Service Points 250 Commercial Service Points	50 MW	50 MW
Key Challenges and Areas of Focus	1. CCA Adoption, Coordination & Implementation 3. Partnerships with Automation Service Providers (ASP)		2. Complex Rate Design 4. Partnerships with other PG&E programs
Systems and Processes	Dependent on implementation of a 3 rd Party PG&E billing system (Vendor enabled “Shadow billing” platform)		



Questions



Robert Kasman, PG&E
Principal Product Manager
415-314-4206
Robert.Kasman@pge.com