

Joint Panel for Rate Design and Energy Resources and the Environment Subcommittees

REFLECTING REALITY: THE EVOLUTION OF RATE DESIGN FOR POWER DELIVERY

NARUC WINTER POLICY SUMMIT, FEBRUARY 10, 2019



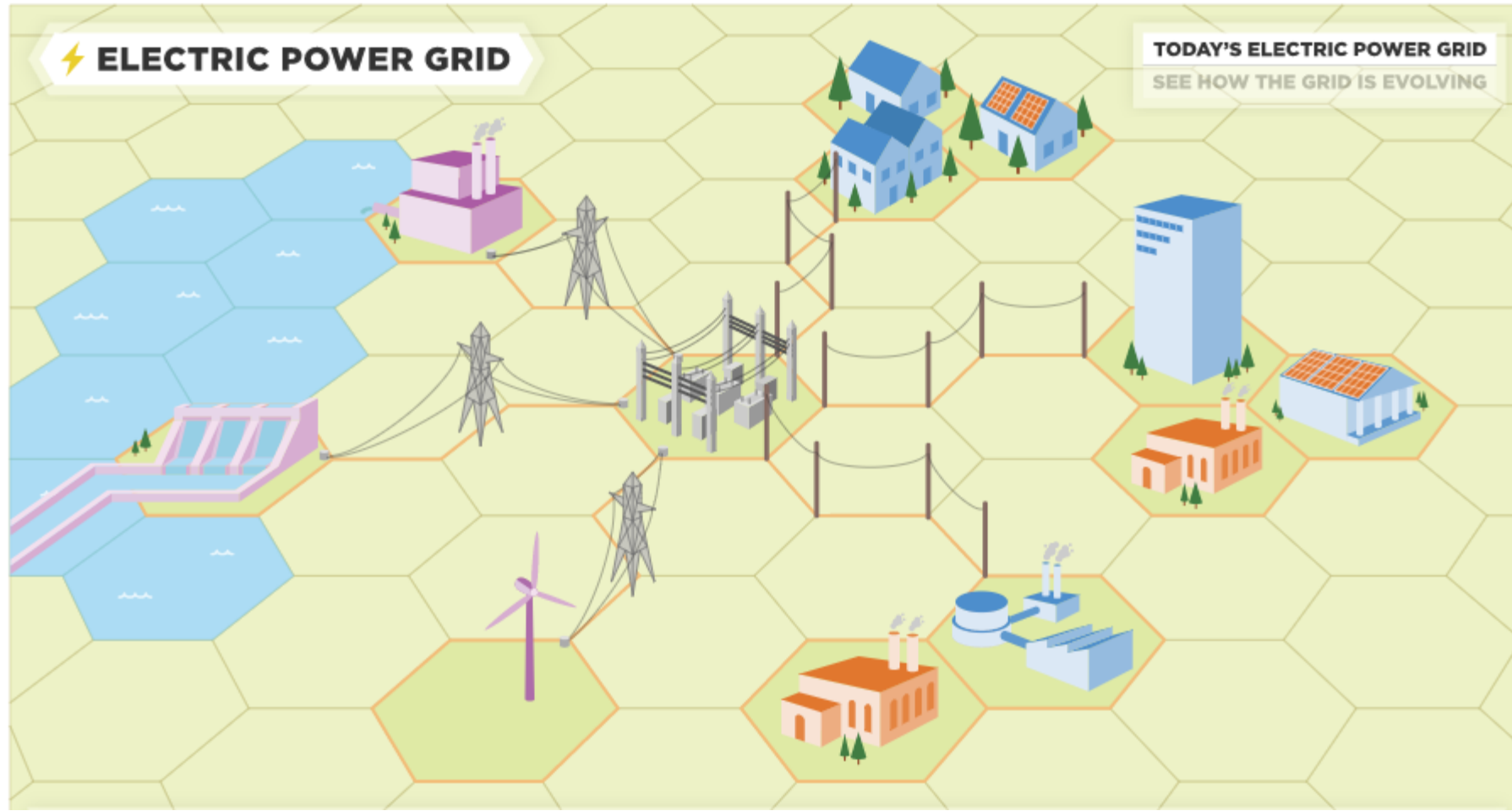
Demand Side Analytics
DATA DRIVEN RESEARCH AND INSIGHTS



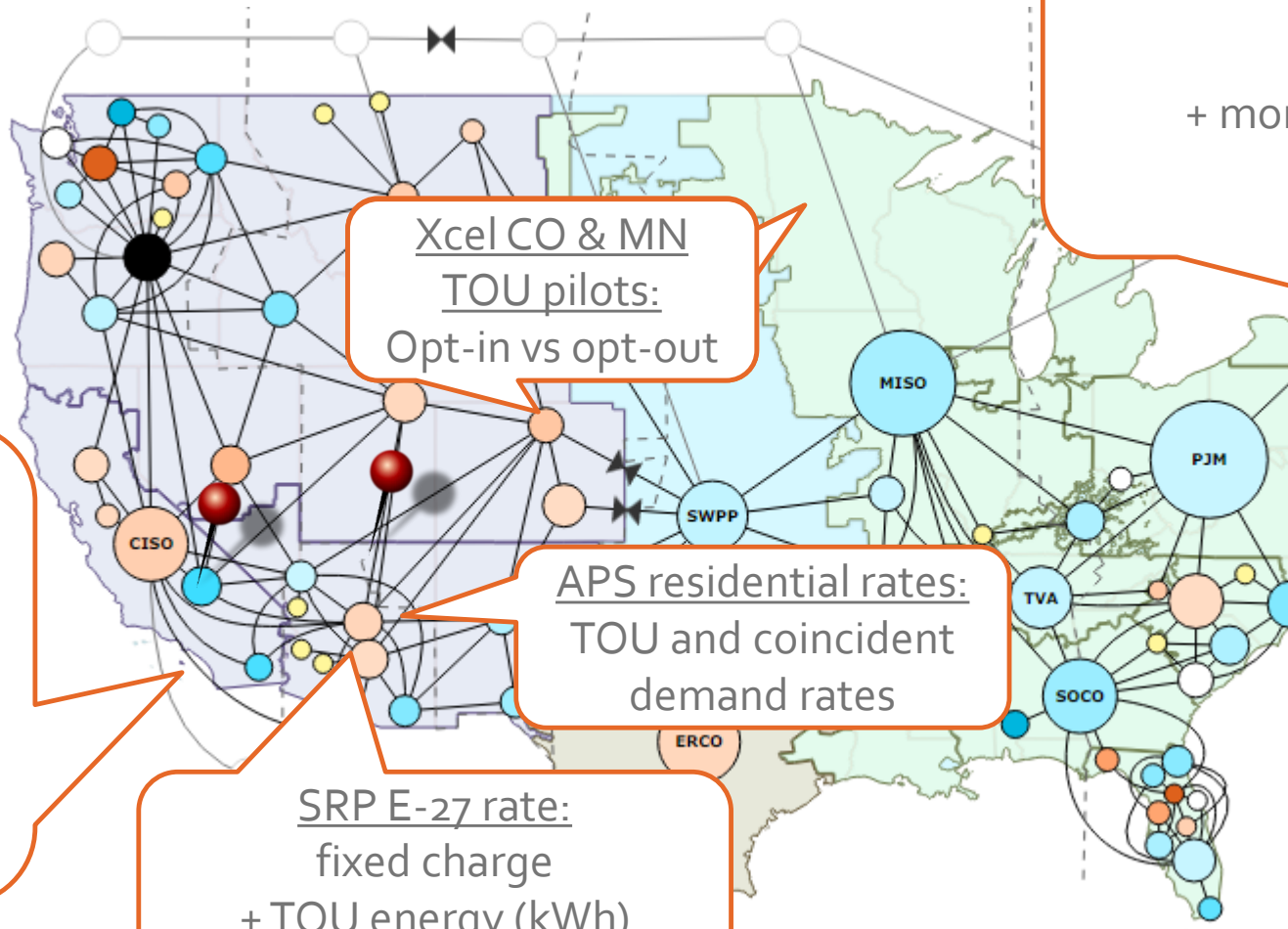
Demand Side Analytics
DATA DRIVEN RESEARCH AND INSIGHTS

INTRODUCTION TO COST-REFLECTIVE RATES

THE GRID IS THE PLATFORM FOR OUR NETWORKED, 2-WAY POWER SYSTEM



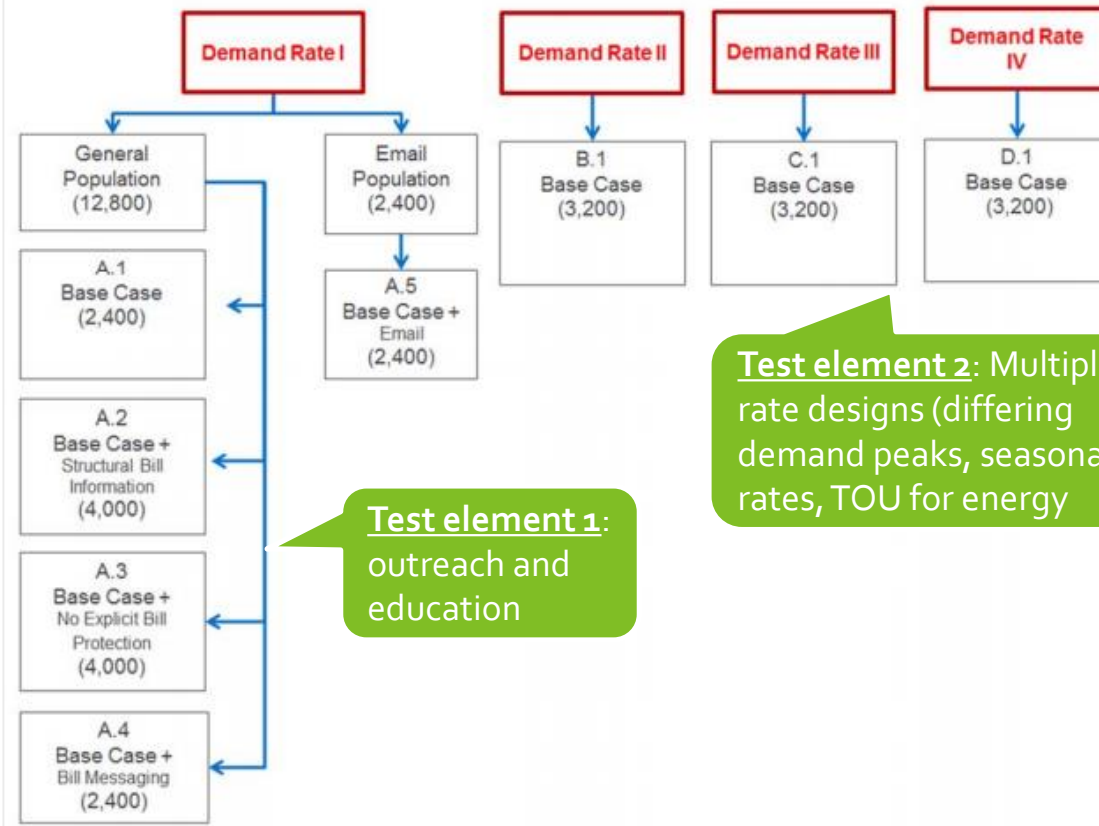
SOME UTILITIES ARE EXPERIMENTING WITH COST REFLECTIVE RATES



EXAMPLE 1: CON EDISON INNOVATIVE PRICING PILOT (APPROVED)

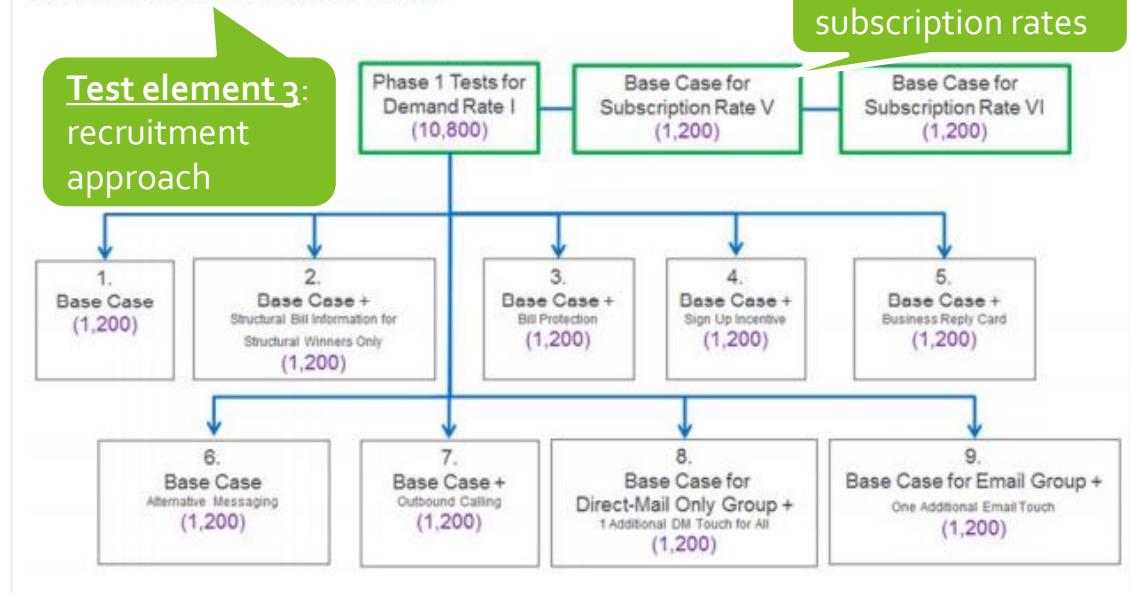
Opt-out

Exhibit 1-1: Opt-Out Enrollment Design⁴



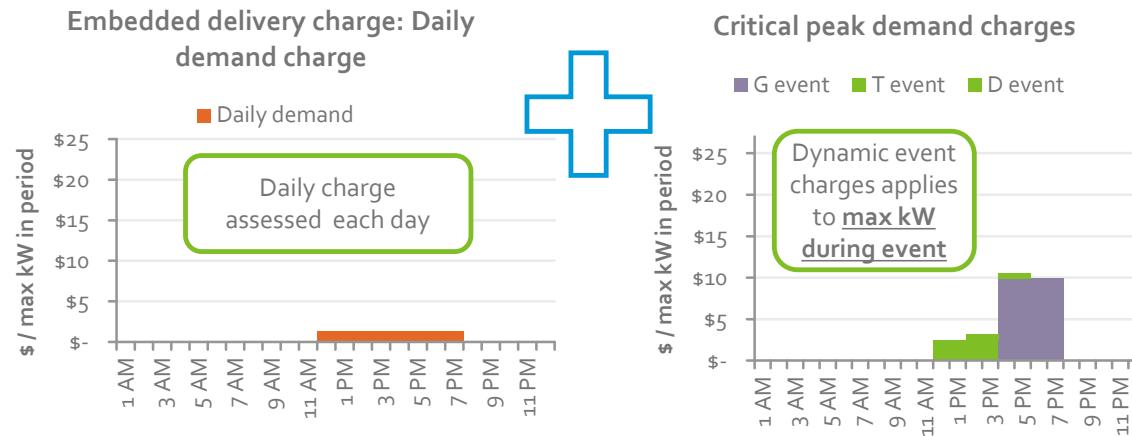
Opt-in

Exhibit 1-2: Opt-in Recruitment Design



EXAMPLE 2: CON EDISON SMART HOME RATE DEMO (PROPOSED)

Rate A: Daily demand + price responsive tech



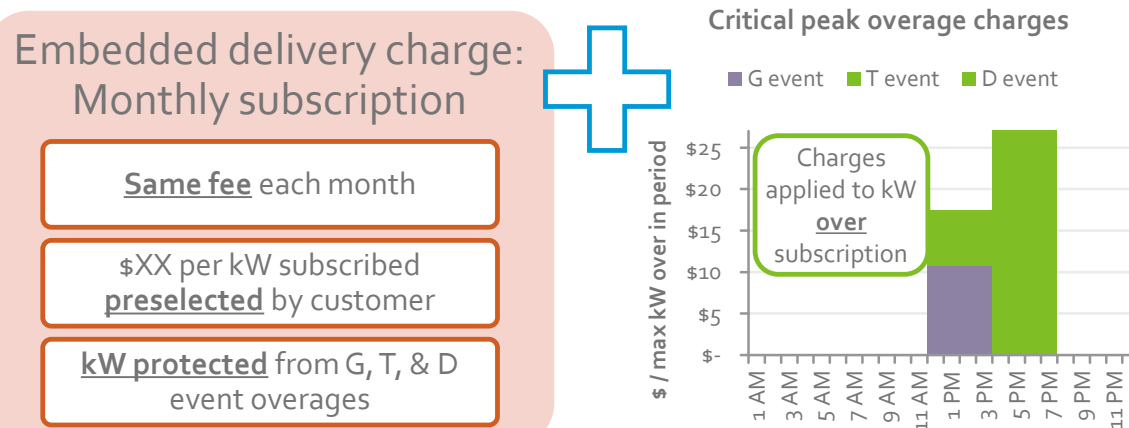
- Prices to devices demo enabled by price responsive tech:

- smart thermostat OR
- storage

- Locational components:

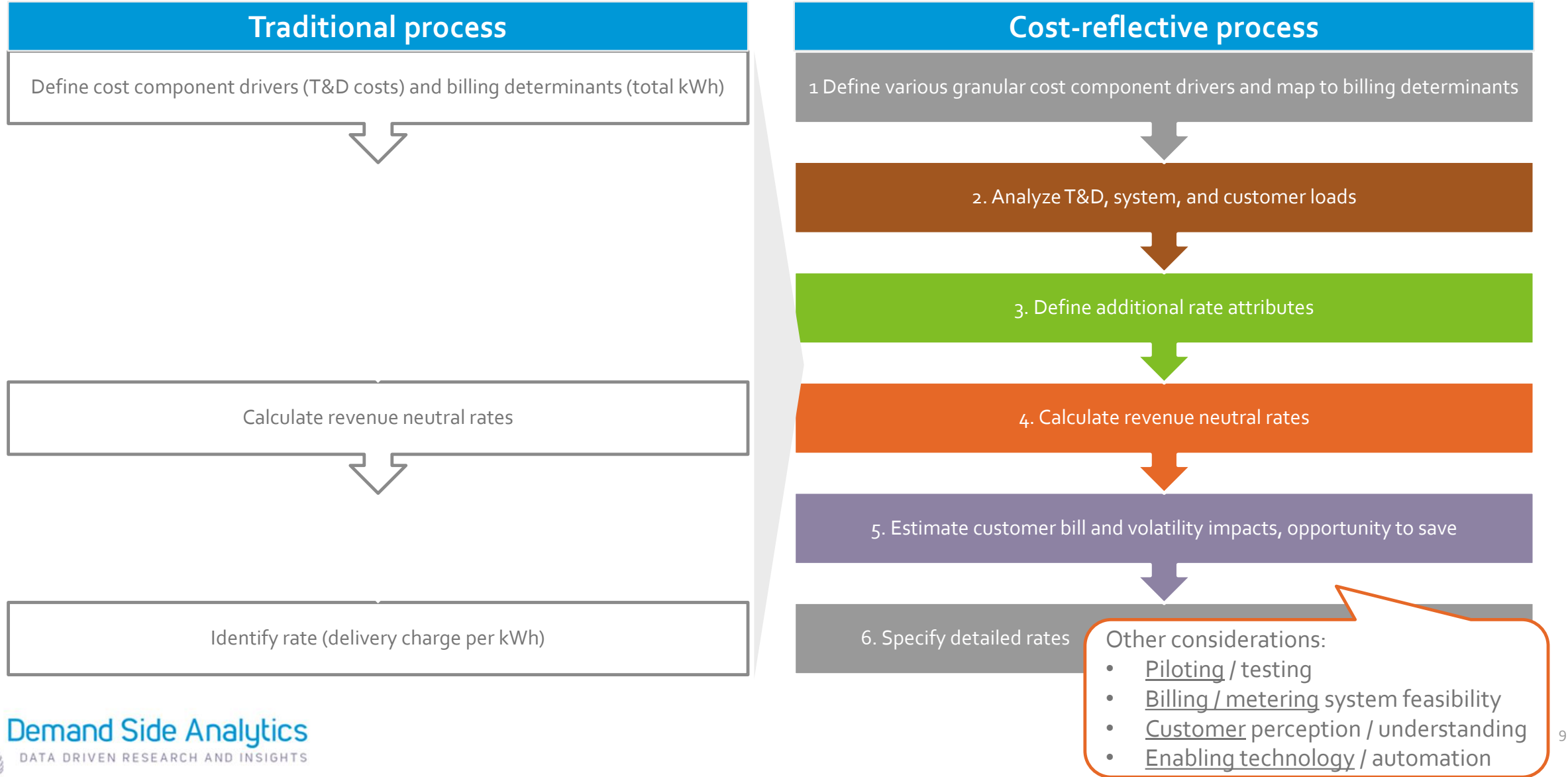
- Both rates include NYISO LMP hourly supply charges
- Peak window reflects network peaks
- Separate, stackable G,T,&D events enable of locationally varied peaks

Rate B: Demand subscription + price responsive tech



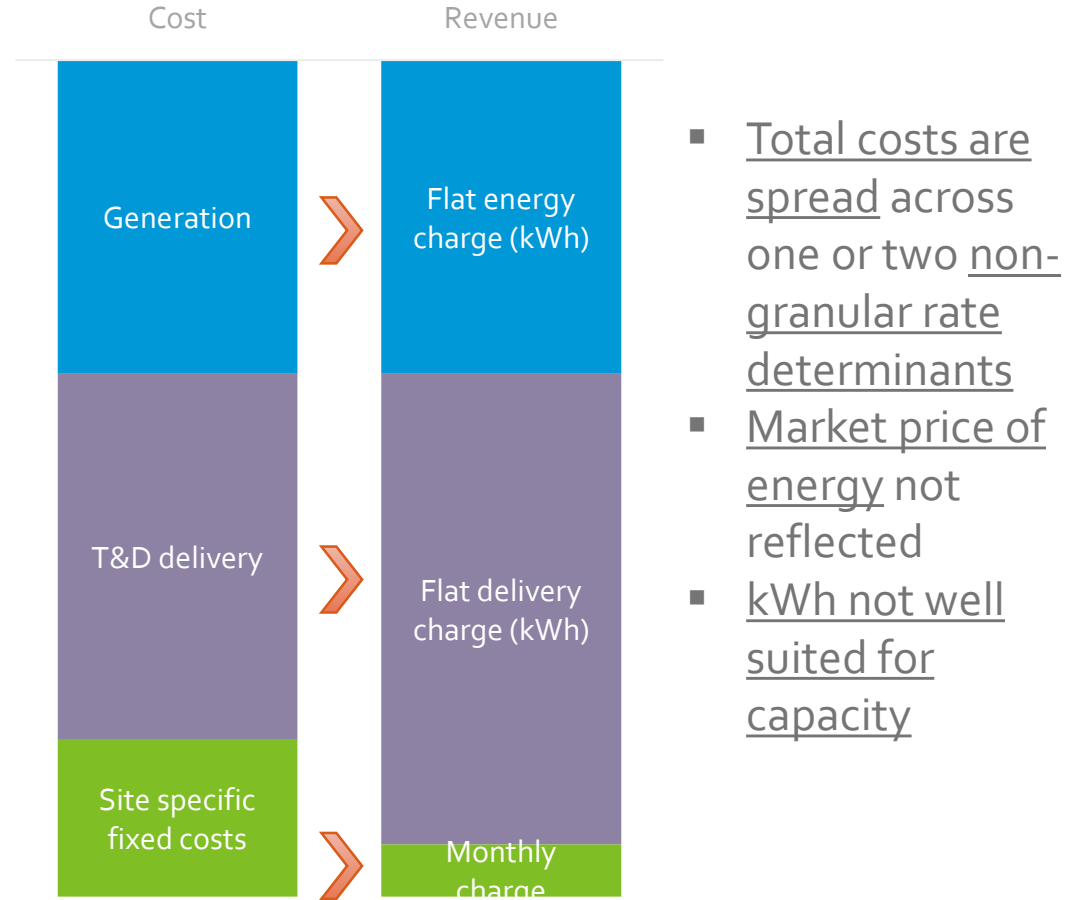
RATE DESIGN APPROACH

COST-REFLECTIVE RATE DESIGN PROCESS FAR MORE COMPLEX THAN TRADITIONAL PROCESS

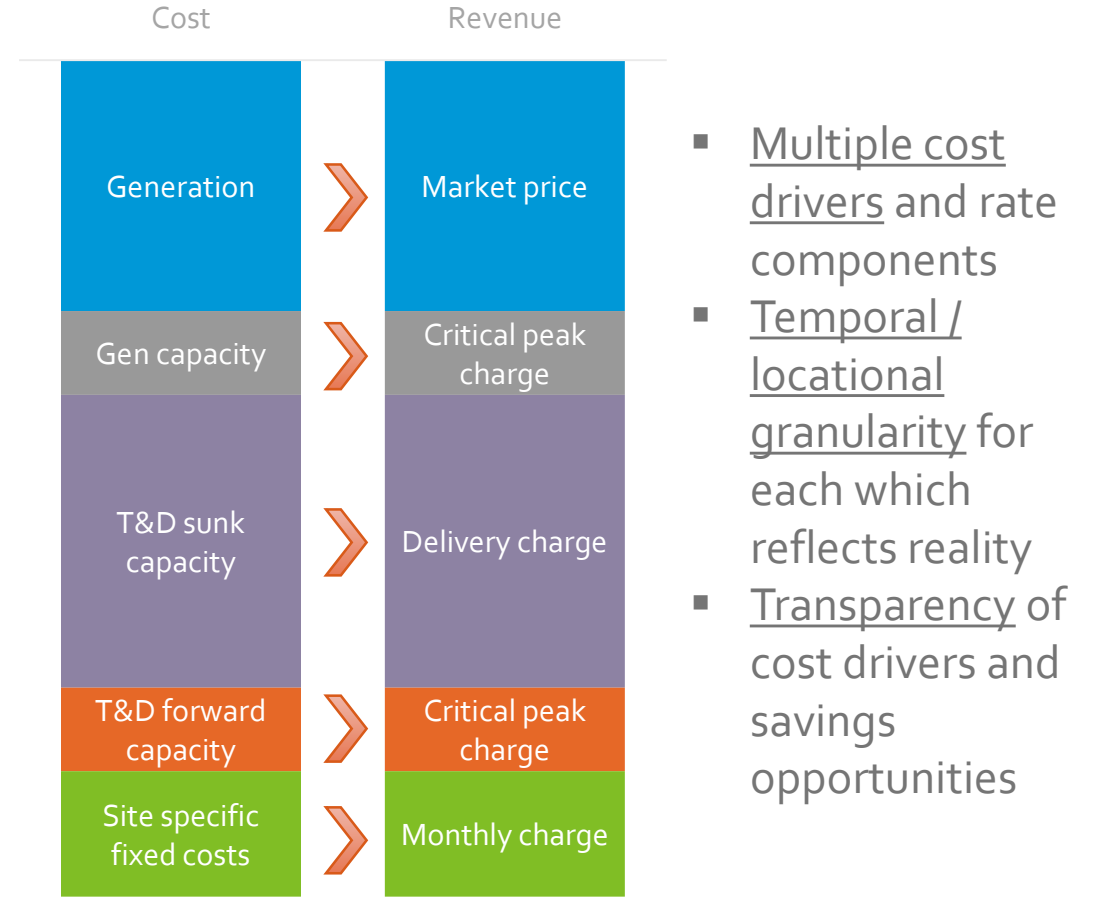


TRADITIONAL RATE DESIGN DOES NOT REFLECT REALITY OF COSTS

Traditional rates misaligned w/ costs, determinants



Rates could better reflect what, where, when



MANY OPTIONS FOR EACH COMPONENT OF COST-REFLECTIVE RATES

Energy (kWh)

TOU

Hourly market price

Sub-hourly market price

Sunk capacity (kWh or kW)

Time-of-use

Broad vs narrow peak window, seasonality

Bi-directional (absolute value of hourly kWh)

Energy highway usage charge

Daily demand charges

Align window with whole system vs local usage

Coincident monthly demand

Average in top N system hours (many vs few)

Demand subscription

% of historical demand: all hours vs coincident

Forward capacity (kWh or kW)

Critical peak event length

Broad vs narrow window

Critical peak event frequency

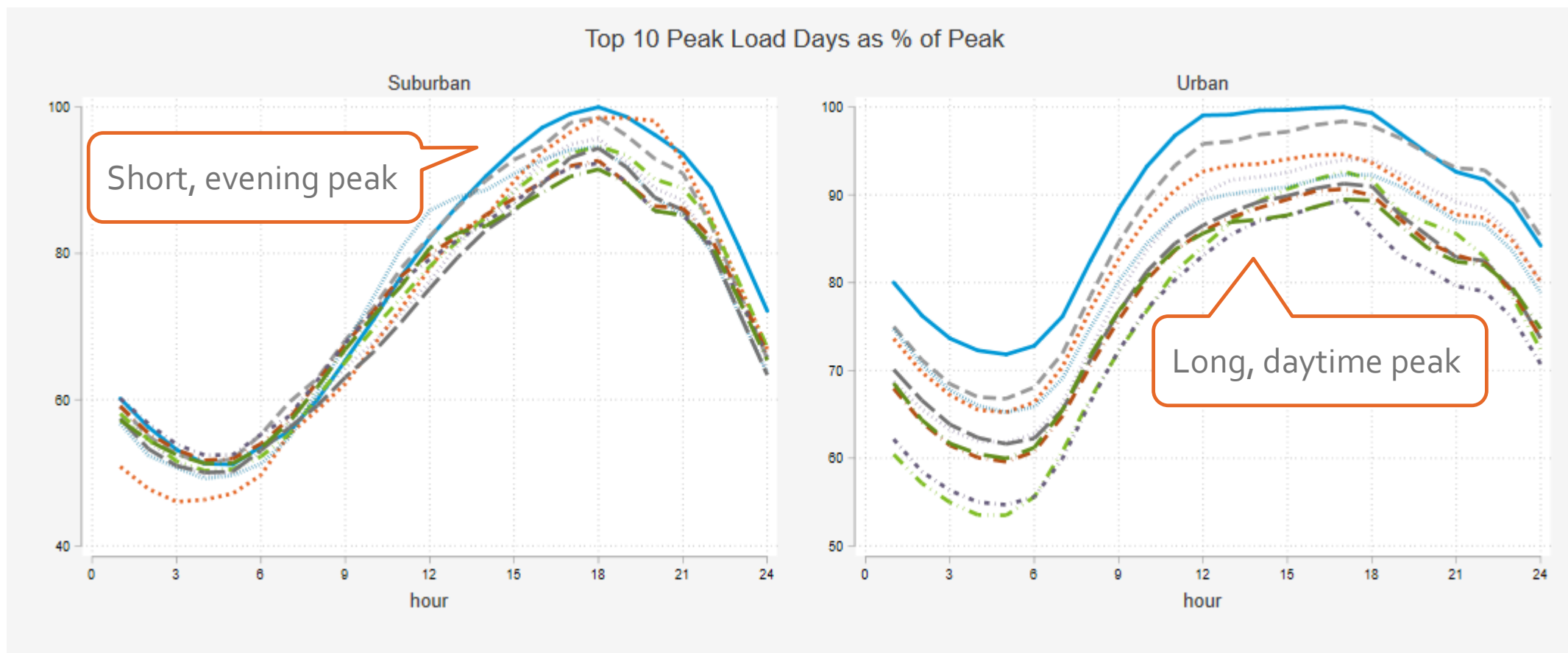
More vs fewer events

Critical peak season

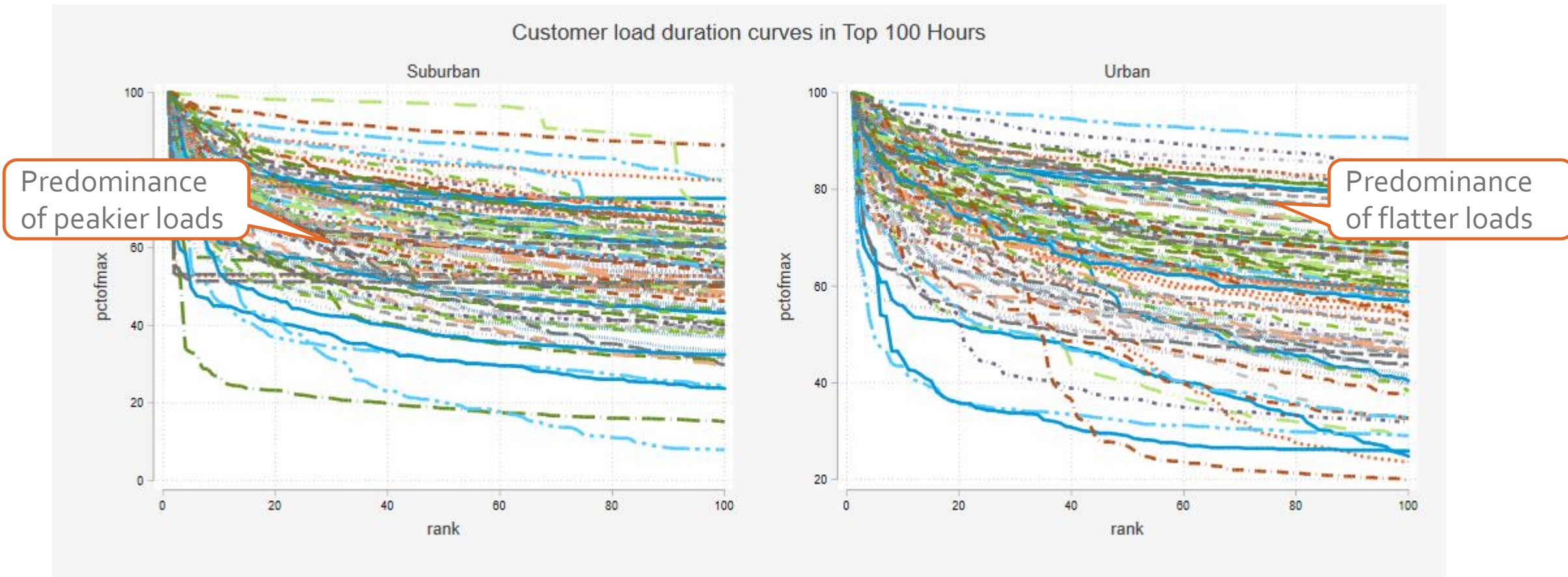
Summer only vs Winter and Shoulder



EVEN WITH SIMILAR COST-REFLECTIVE STRUCTURES, RATE VALUES AND WINDOWS WILL VARY TO REFLECT ACTUAL ENERGY USAGE PATTERNS



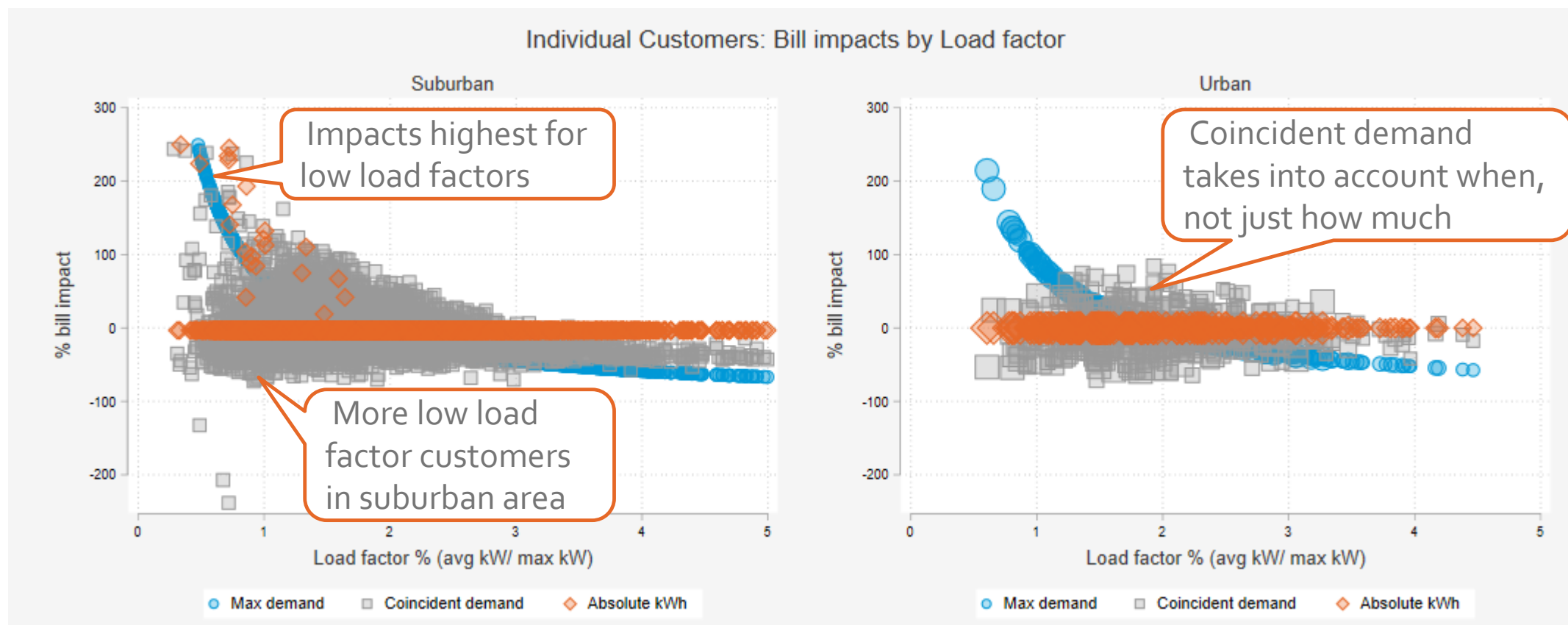
PEAK LOAD DURATION CURVES VARY WIDELY ACROSS CUSTOMERS



Rate element choices substantially change distribution of customer impacts



WINNERS AND LOSERS FOR EXAMPLE RATES: COINCIDENCE, PEAKINESS STRONGLY INFLUENCE STRUCTURAL BILL IMPACTS



Any change to an existing rate will have some immediate winners and non-winners but if structured right can provide non-winners an opportunity to benefit

WHY AND HOW TO TRY COST-REFLECTIVE RATES

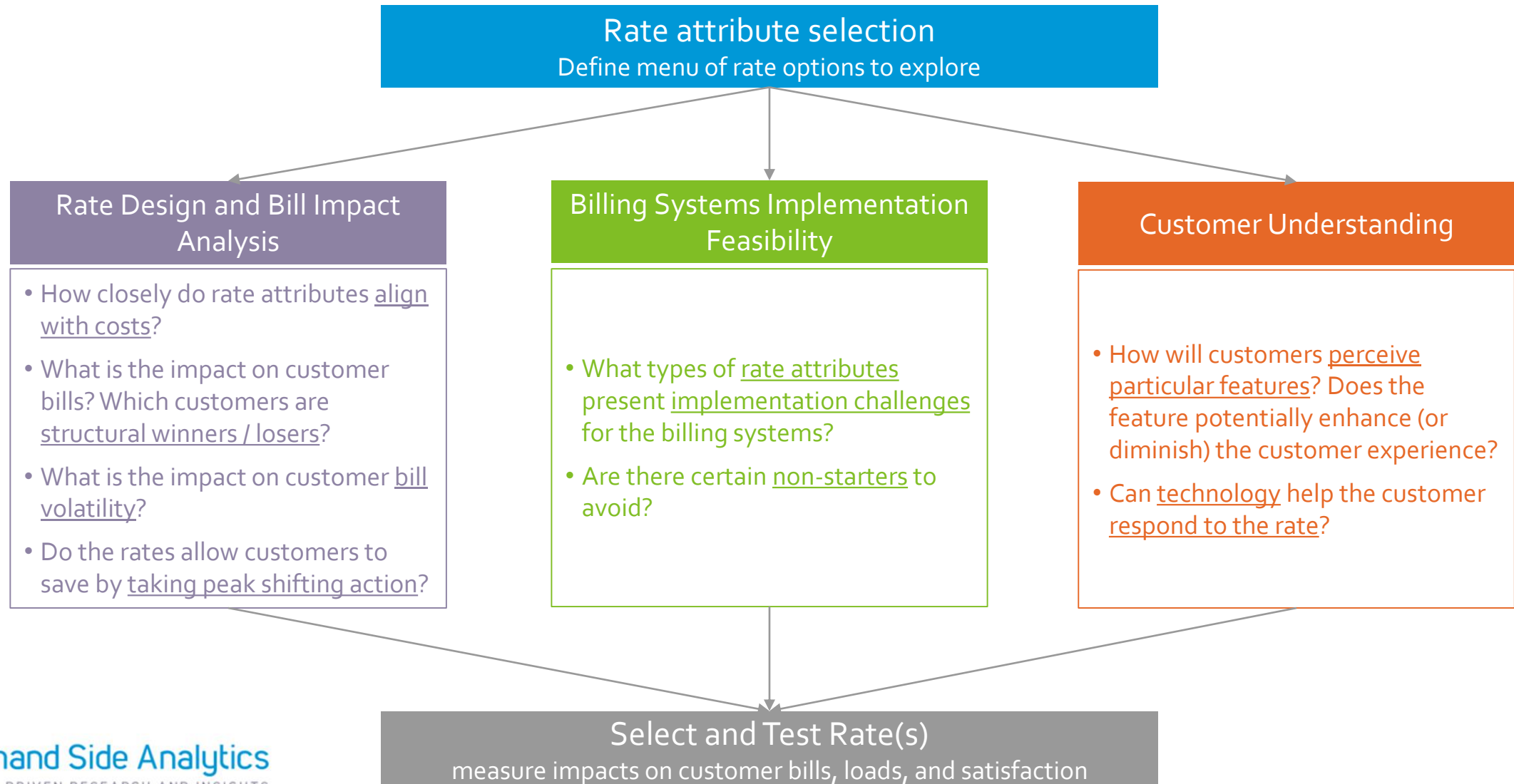
BENEFITS OF MODERN RATE DESIGN OVER TRADITIONAL APPROACH

Reflects when and where
costs are incurred, and
which costs can and can't
be avoided

Allocates delivery costs
by share of system usage
not share of energy
consumption

Transparently
incentivizes efficient
customer investment

CONSIDERATIONS FOR TESTING COST-REFLECTIVE RATES



QUESTIONS?



Alana Lemarchand
Partner & Principal
Demand Side Analytics
alana@demandsideanalytics.com
408.454.8158

Joint Panel for Rate Design and Energy Resources and the Environment Subcommittees

SUBSCRIPTION PRICING

NARUC: FEBRUARY 2019

LON HUBER

DIRECTOR - HEAD OF NORTH AMERICAN RETAIL
REGULATORY OFFERING



NAVIGANT

MEGA TRENDS

1. Declining traditional usage
2. Low energy costs but high peak infrastructure costs
3. Advanced metering and on-site tech
4. Electric Vehicles
5. Grid scale renewable energy



WHAT DO CUSTOMERS WANT?

- Most customers spend very little time reviewing their bill and are unlikely to know what they're paying for – instead they look at the total amount due
- Around 25-30% of customers have a complete understanding of only a few energy related terms
- The majority of customers experience higher than expected electric bills

WHAT DO CUSTOMERS WANT?

- **Taxi-meter effect:** customers want to avoid the discomfort of knowing they are charged for each use/incremental increase
- **Insurance effect:** customers want to protect themselves against charges for instances of high use
- **Convenience effect:** flat rate costs are easier to track

VS.

- **Desire for increased control over bill**



CUSTOMERS WANT “SIMPLIFIED” CHOICE

STEP 1 OF 3
Choose a plan that's right for you.
Downgrade or upgrade at any time

Netflix and Verizon

	Basic	Standard	Premium
Monthly price after free month ends on 6/26/18	\$7.99	\$10.99	\$13.99
HD available	×	✓	✓
Ultra HD available	×	×	✓
Screens you can watch on at the same time	1	2	4
Watch on your laptop, TV, phone and tablet	✓	✓	✓
Unlimited movies and TV shows	✓	✓	✓
Cancel anytime	✓	✓	✓

gounlimited✓

All the data you need on America's best network.

beyondunlimited✓

Everything you want from an unlimited plan. And then some.

How many lines do you need?

4 lines

\$40

per line/4 lines for \$160

Per month. Plus taxes & fees. When you enroll in Auto Pay. ⓘ



\$50

per line/4 lines for \$200

Per month. Plus taxes & fees. When you enroll in Auto Pay. ⓘ



Plan details +

Unlimited 4G LTE data ⓘ	Premium unlimited 4G LTE data ⓘ
Unlimited Talk & Text	Unlimited Talk & Text
DVD-quality streaming ⓘ	HD-quality streaming
Unlimited Mobile Hotspot (600kbps)	Unlimited Mobile Hotspot ⓘ

ENERGY SERVICE SUBSCRIPTION MODEL

- The Energy Service Subscription Plan is an offering that would allow customers to pay a fixed monthly bill for energy use
 - Price is custom to each customer, based on historic usage and selected perks
- The Subscription Plan allows the customer to swap their volumetric price risk in exchange for a fixed monthly bill
 - Can be a long term lock
- The customer would be outfitted with DSM technology – the more control they give, the more they save
 - While there is some risk associated with overconsumption, that risk is confined to fuel and capacity risk during certain times of the year (if capacity short)
- Can be designed to give middle and lower income ratepayers access to newer, more efficient technologies and appliances
 - Stabilize their bills
- Subscription Plan option gives the provider a portfolio diversification benefit with respect to revenue recovery.

CHOOSE A PLAN THAT'S RIGHT FOR YOU



*Fixed monthly price based on household profile usage
(Your average current bill is \$115/month)*

Unlimited Savings

\$115/month for
36 months

Unlimited Choice

\$125/month for
36 months

Unlimited Premium + EV

\$145/month for
36 months

30% Clean Energy with energy portal app	✓	✓	✓
100% Clean Energy	✗	✗	✓
Free Smart Thermostat	✓	✓	✓
Access to free or discounted energy efficiency upgrades	✓	✓	✓
Unlimited EV charging at home and in community	✗	✗	✓
Maximum number of control days	30	15	7
Free control day over rides per year	3	5	7

CHOOSE YOUR COMFORTS.

Rooftop Solar + \$15/Mo



Smart EV Charger - \$2/Mo



Home Monitoring + \$10/Mo



Smart Thermostat - \$5/Mo



Battery backup + \$20/Mo



Home upgrades - \$10/Mo



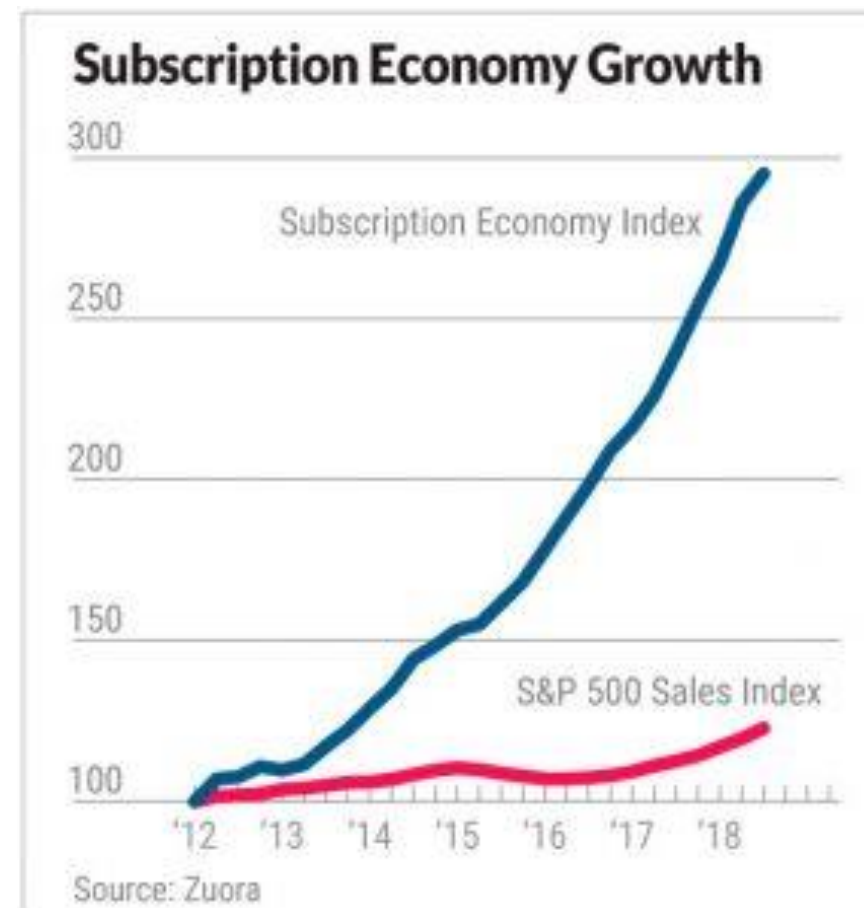
IS THIS A WIN-WIN-WIN?

- The incentive to limit usage has not gone away, but has been shifted to another party, namely the provider offering the Service Subscription Plan.
 - Business symmetry, upside and downside for the utility
- Low-moderate-income benefits
 - Predictable bill and access to home upgrades
- Focus on improving the cost of service with shared savings potential
 - Optimized DSM
- A customer centric portfolio approach

BUSINESS MODEL CONSIDERATIONS

Investors give higher valuations to companies with a subscription business than those with transactional sales, analysts say.

Investors Business Daily, December 2018



<https://www.zuora.com/resource/subscription-economy-index/>



CONTACTS & LINKS

LON HUBER

Director

(928) 380-5540

lhuber@navigant.com

<https://www.navigant.com/insights/energy/2018/should-utilities-offer-subscriptions>

<https://www.utilitydive.com/news/utilities-see-opportunity-in-energy-as-a-service-offerings/544973/>

<https://www.navigantresearch.com/news-and-views/primer-subscription-pricing-for-regulated-and-competitive-energy-providers>

<https://www.utilitydive.com/news/pge-sce-sdge-pursue-subscriptions-time-of-use-rates-to-drive-more-cali/545907/>

DISCLAIMER

Notice Regarding Presentation

This presentation was prepared by Navigant Consulting, Inc. (Navigant) for informational purposes only. Navigant makes no claim to any government data and other data obtained from public sources found in this publication (whether or not the owners of such data are noted in this publication).

Navigant does not make any express or implied warranty or representation concerning the information contained in this presentation, or as to merchantability or fitness for a particular purpose or function. This presentation is incomplete without reference to, and should be viewed solely in conjunction with the oral briefing provided by Navigant. No part of it may be circulated, quoted, or reproduced for distribution without prior written approval from Navigant.

MORE COMING



How It Works

About Us

Click or call: (866) 403-2620

Get started →



Energy + Smart Devices. One subscription.

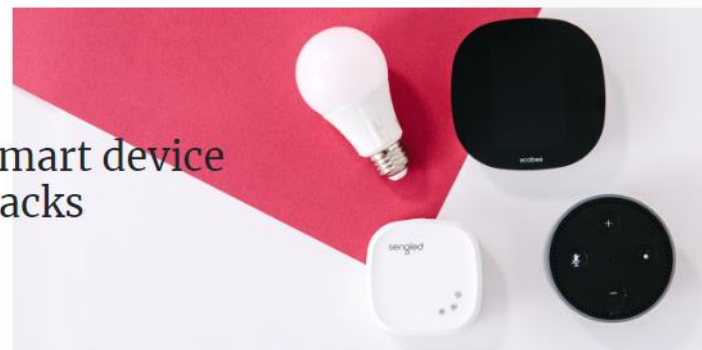


Pay one flat monthly supply price for clean energy & a smarter home.

100% clean
energy



Smart device
packs



Joint Panel for Rate Design and Energy Resources and the Environment Subcommittees

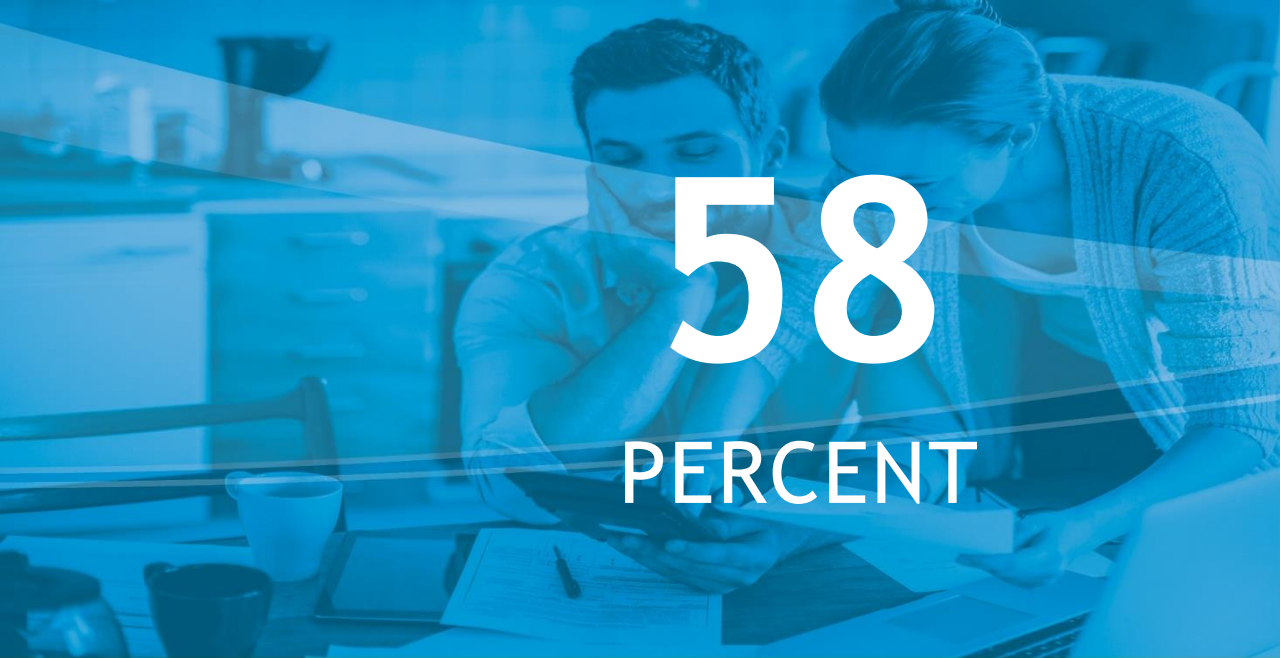
2019 NARUC Winter Policy Summit

Rate Design Panel

An Overview of APS's Residential Rates

Leland Snook
Director, Rates & Rate Strategy

February 10, 2019



58
PERCENT

RESIDENTIAL
CUSTOMERS ON
TIME-OF-USE
RATES

RESIDENTIAL
CUSTOMERS ON
DEMAND RATES



ABOUT
229
THOUSAND

APS's SETTLEMENT RESIDENTIAL RATES

- Approved without modification, ACC Decision No. 76295
- Cancels existing residential rates rather than freeze them
- Transition rates phased out May 1, 2018 after customer education and outreach
- Customers were advised of the best rate and options, but customers choose their rate plan
- Customers who did not choose a new rate moved to the “most like” rate

APS's SETTLEMENT RESIDENTIAL RATES

New suite of rates:

- Three Time of Use Demand rates (on-peak 3pm – 8pm, weekdays)
 - Includes a new technology pilot rate, R-TECH
- Three basic rates, without an inclining block
- One Time of Use Energy rate (on-peak 3pm – 8pm, weekdays, plus a winter season super off-peak 10am – 3pm, weekdays)
- New solar customers must be on Time of Use Demand or Energy rates
 - A Grid Access Charge of \$0.93 per installed kW-dc applies on TOU-E;
 - GAC designed to achieve a self-consumption offset rate of \$0.105 per kWh;
 - Instantaneously exported energy is purchased at a Resource Comparison Proxy price of \$0.129 per kWh for 10 years;
 - RCP is reset each year, creating tranches, reduced by no more than 10%;
 - Arizona Corporation Commission will use RCP and avoided cost to determine export compensation in APS's next rate case
- Existing solar customers are grandfathered for 20 years from date of interconnection on legacy rates

APS's SETTLEMENT RESIDENTIAL RATES

	BASIC SERVICE CHARGE (\$ per Month)	ON-PEAK DEMAND CHARGE (\$/kW)	SUMMER ENERGY CHARGE (On/Off Peak \$/kWh)	WINTER ENERGY CHARGE (On/Off/Super-Off Peak \$/kWh)
R-XS (≤ 600 kWh per Mo.)	\$10	None	\$0.11672	\$0.11672
R-BASIC ($> 600 \leq 1,000$ kWh per Mo.)	\$15	None	\$0.12393	\$0.12393
R-BASIC L ($> 1,000$ kWh per Mo.)	\$20	None	\$0.13412	\$0.13412
TOU-E	\$13	None	\$0.24314/\$0.10873	\$0.23068/\$0.10873/ \$0.032
R-2	\$13	\$8.40	\$0.1316/\$0.07798	\$0.11017/\$0.07798
R-3	\$13	\$17.438 Summer/ \$12.239 Winter	\$0.08683/\$0.0523	\$0.06376/\$0.0523
R-TECH	\$15	\$20.25 Summer/ \$14.25 Winter/ \$6.50 Off-peak above 5 kW	\$0.0909/\$0.05475	\$0.06670/\$0.05475

After May 1, 2018: (1) R-Basic L will be frozen; (2) customers who do not qualify for R-XS must try a TOU Demand or Energy rate for at least 90 days; and (3) after 90 days, a customer may opt-out to R-Basic if they qualify, but must remain for a year

CORE CUSTOMER MESSAGE

SHIFT, STAGGER, SAVE

3 ways to save during on-peak hours (3pm-8pm on weekdays)



shift

usage from on-peak
to off-peak



stagger

the use of major
appliances



save

with tips and tools

APS's RESIDENTIAL RATE MIGRATION DECEMBER 2018

- 1,048,600 residential customers on new suite of rates
- 76,000 grandfathered solar customers (approximately 7%)
- Customers received information in advance about their “most like” and “best” rates.
- Customers could choose a new rate beginning August 19, 2017
- Auto-migration began in mid-February, complete May 1, 2018
- If customers did not proactively select a new rate, they were placed on their “most like” rate as part of the auto-migration
- 33% of customers “most like” and “best” rate were the same
- 77% of customers were auto-migrated to the “most like” rate
- 23% of customers proactively selected a rate

APS's RESIDENTIAL RATE MIGRATION DECEMBER 2018

WHAT RATES ARE CUSTOMERS SELECTING?

- 20.3% on three-part demand time-of-use rates (228.6k)
 - 0.3% on legacy demand rates (3.6k)
 - 20.0% on new demand rates (225k)
 - 3 out of 4 have selected the higher demand rate option (R-3)
- 38.1% on time-of-use energy only rates (428.1k)
 - 3.3% on legacy TOU (42.8k)
 - 34.3% on new TOU-E (385.3k)
- 41.6%, or 467.5k, on basic rates
 - 2.6% on legacy E-12 (29.4k)
 - 24.2% on Extra Small (R-XS) (271.6k)
 - 11.2% on Medium (R-Basic) (126k)
 - 3.6% on Large (R-Basic Large) (40.5k)

Joint Panel for Rate Design and Energy Resources and the Environment Subcommittees