Advanced Rate Design Workshop

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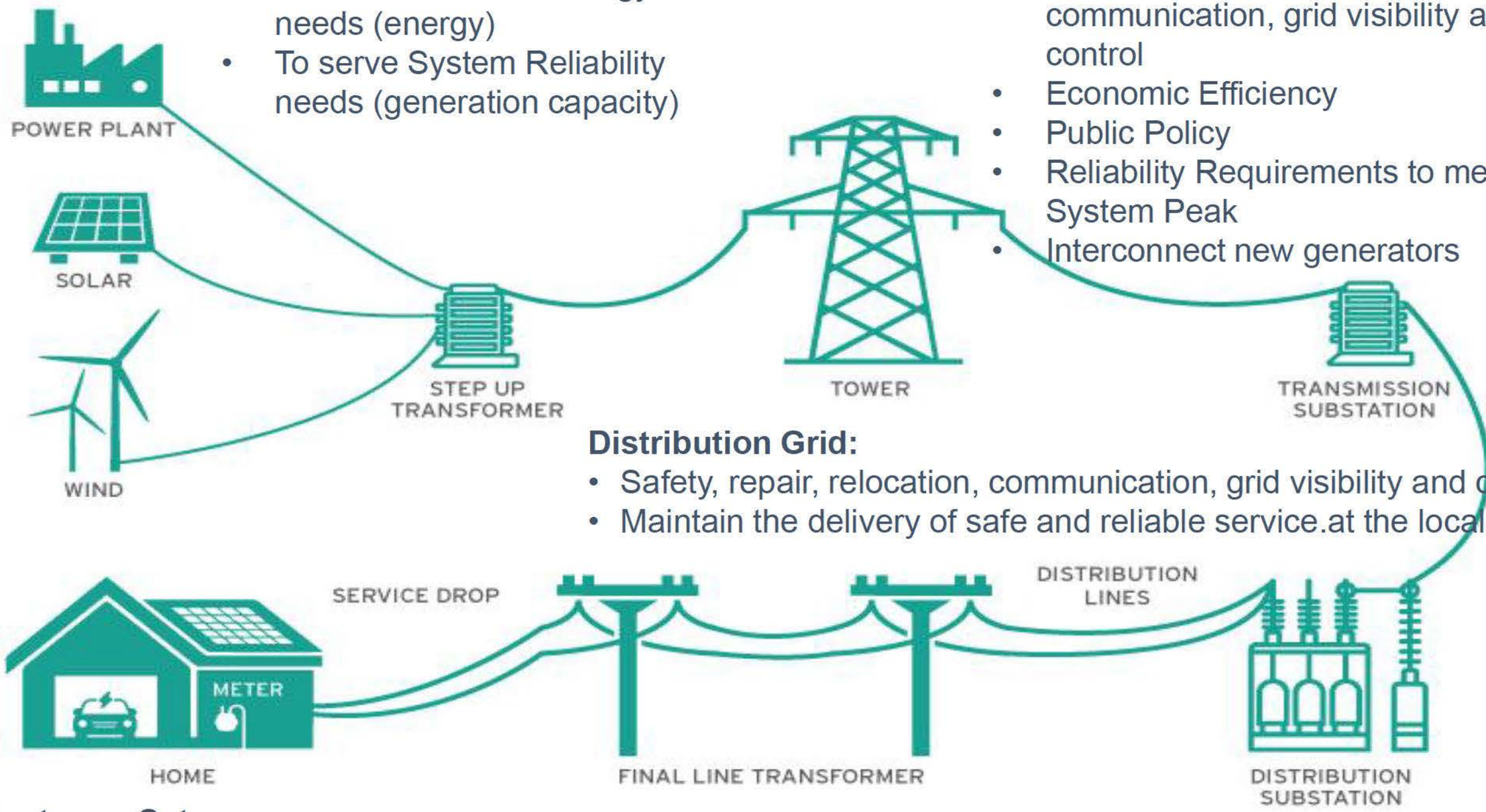
The Utility System

Generation/Commodity:

- To serve customer energy needs (energy)
- To serve System Reliability needs (generation capacity)

Transmission:

- Safety, repair, relocation, communication, grid visibility and control
- Economic Efficiency
- Public Policy
- Reliability Requirements to meet System Peak
- Interconnect new generators



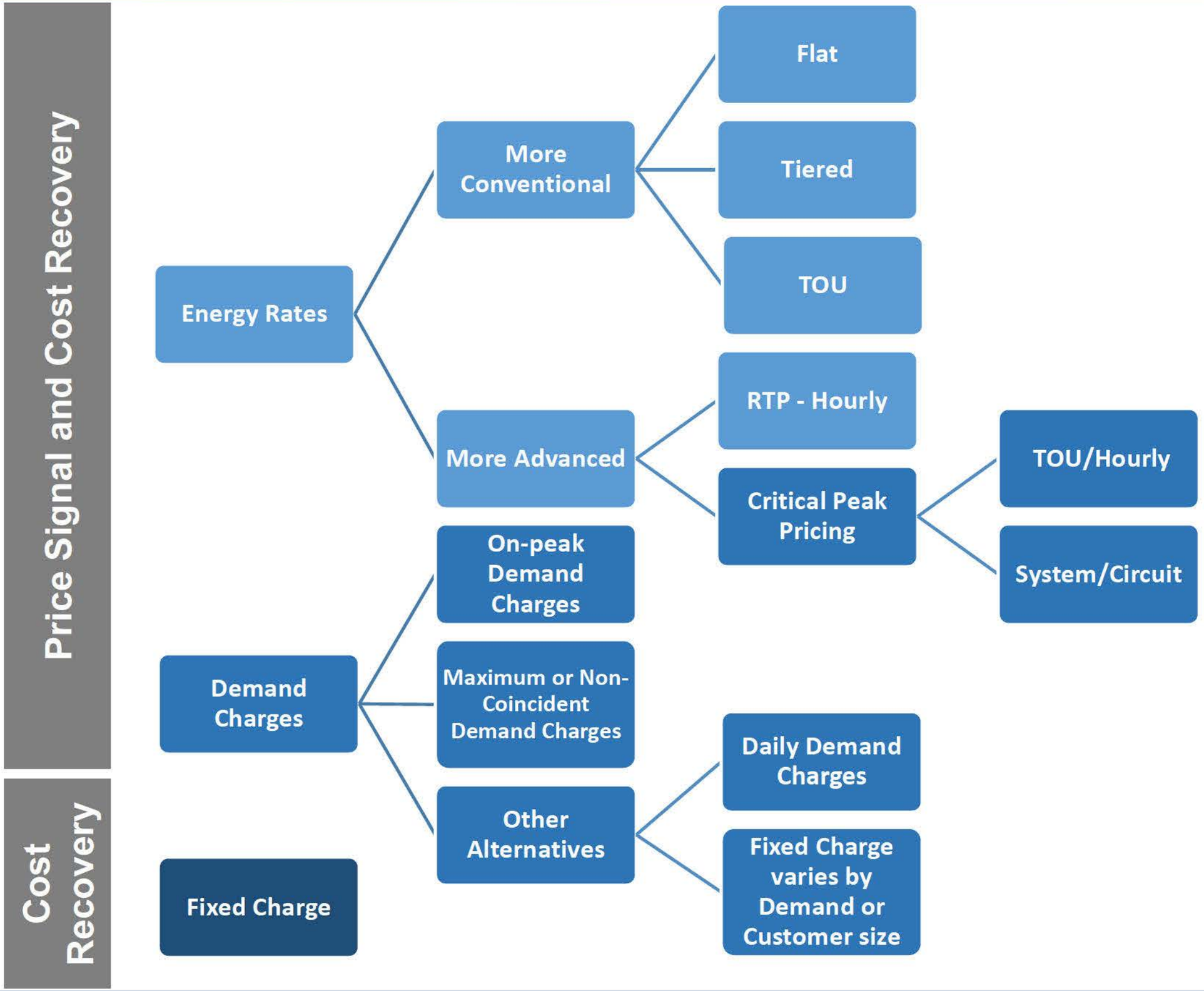
Distribution Grid:

- Safety, repair, relocation, communication, grid visibility and control
- Maintain the delivery of safe and reliable service.at the local level

Customer Set-up:

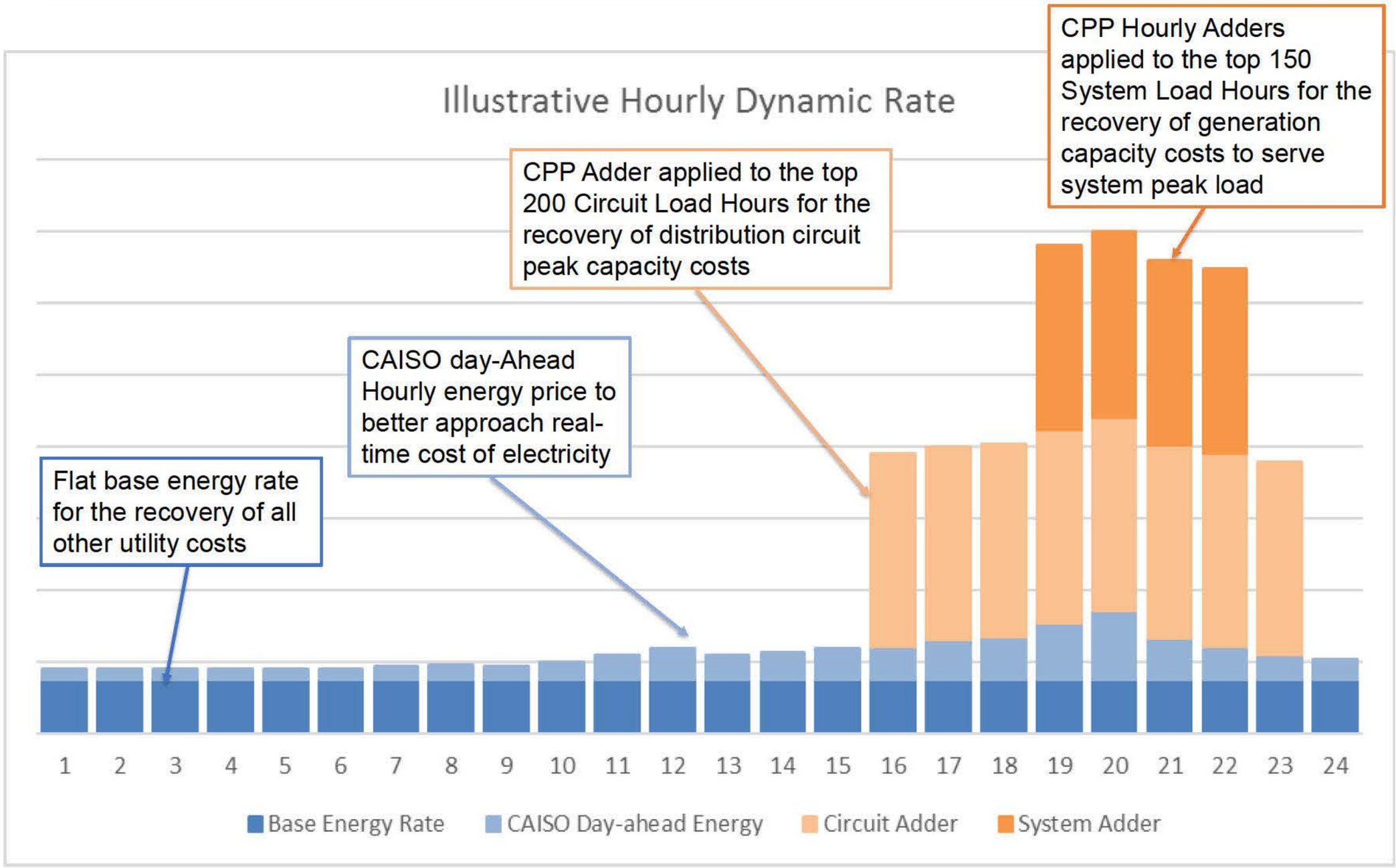
- To ensure customers are ready to receive energy services

Rate Design Tools



Design of an Hourly Dynamic Rate

Advanced technologies partnered with more complex and granular rate design can create more opportunities for low cost hours

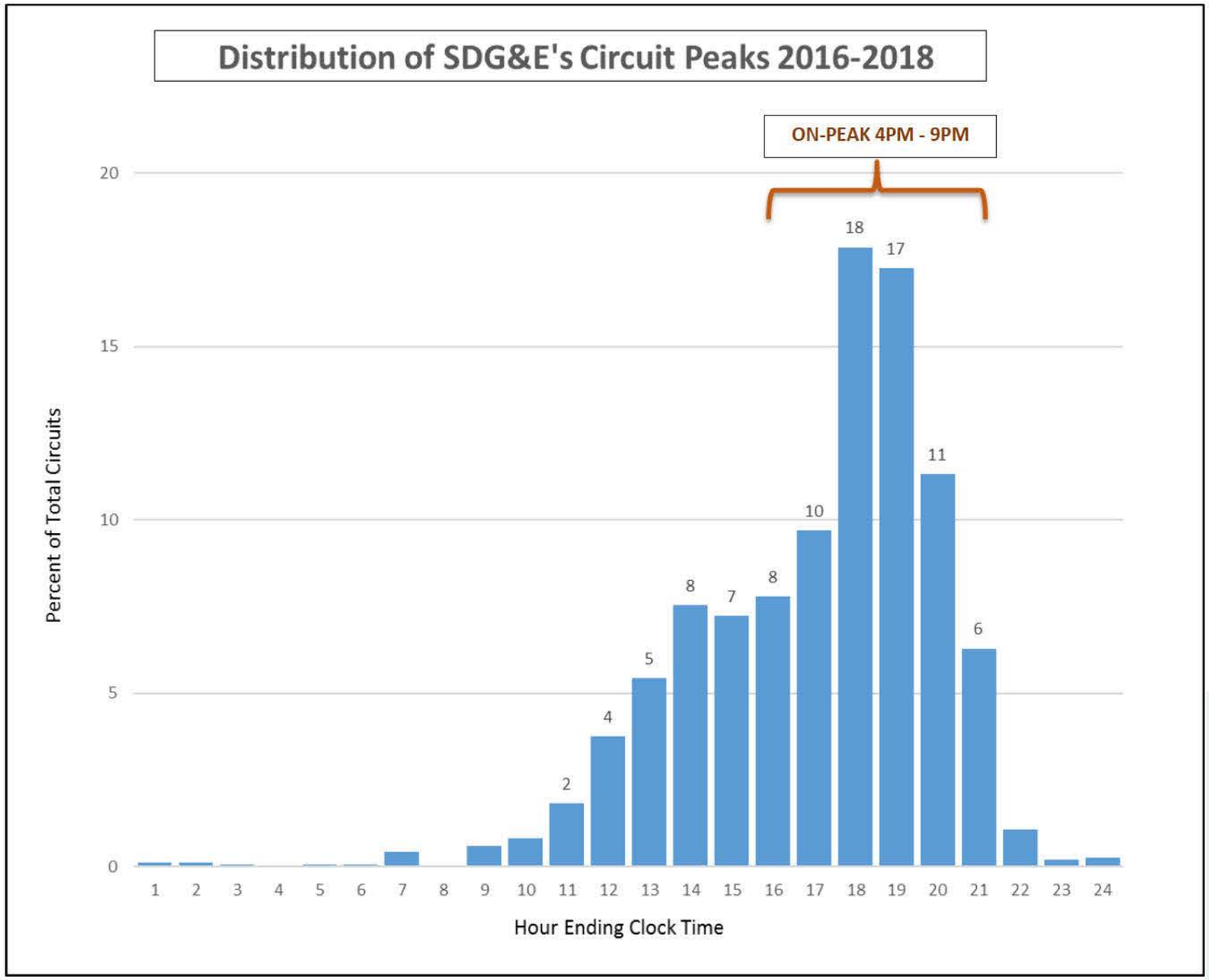


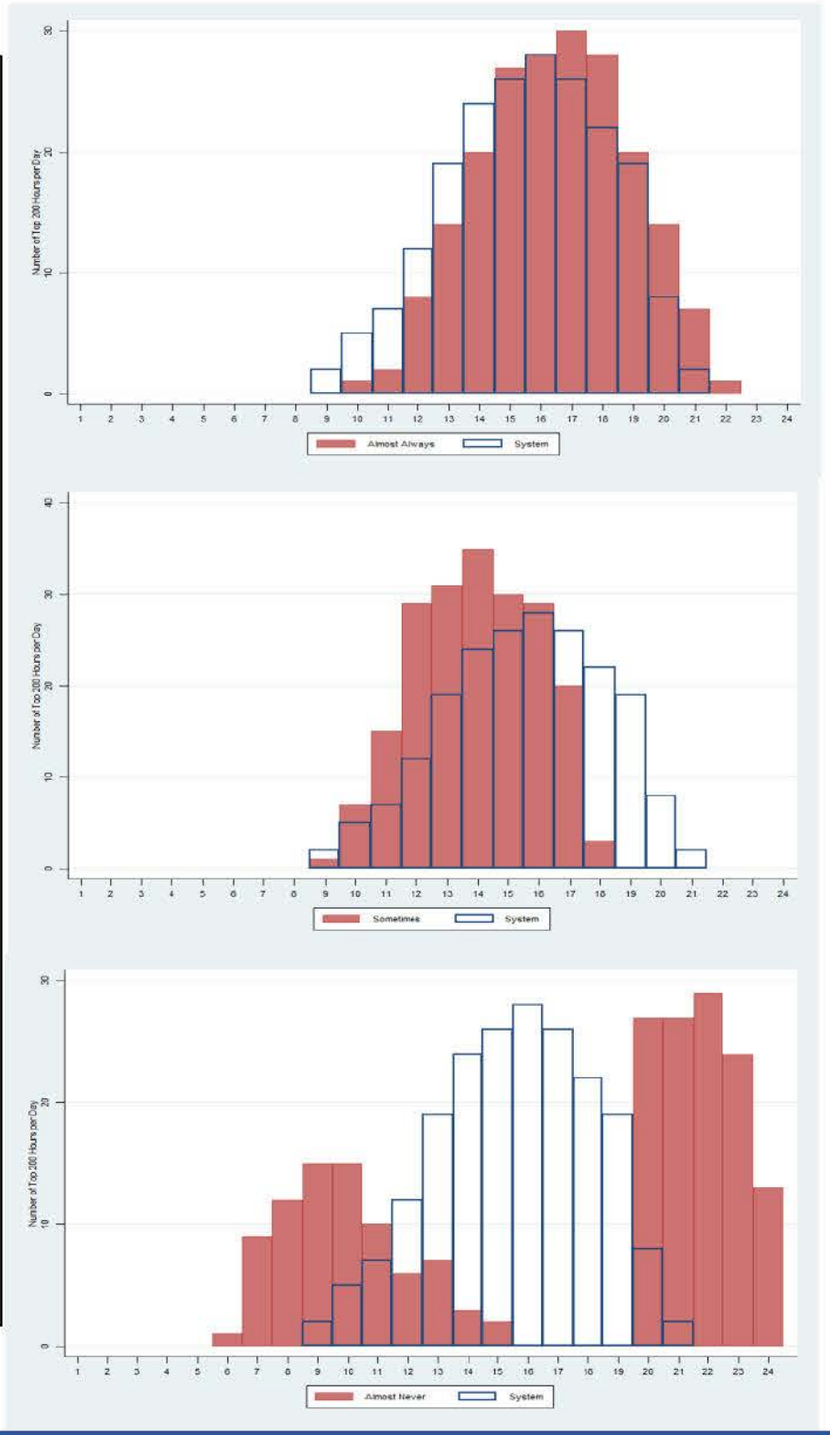
***CPP** is an energy rate option that provides a "capacity" price signal*

***Circuit-level CPP** provides a locational price signal while preserving customer equity by still charging all customers the same price*

Comparison of System and Circuit Peaks

The timing of circuit peaks may not align with system peak





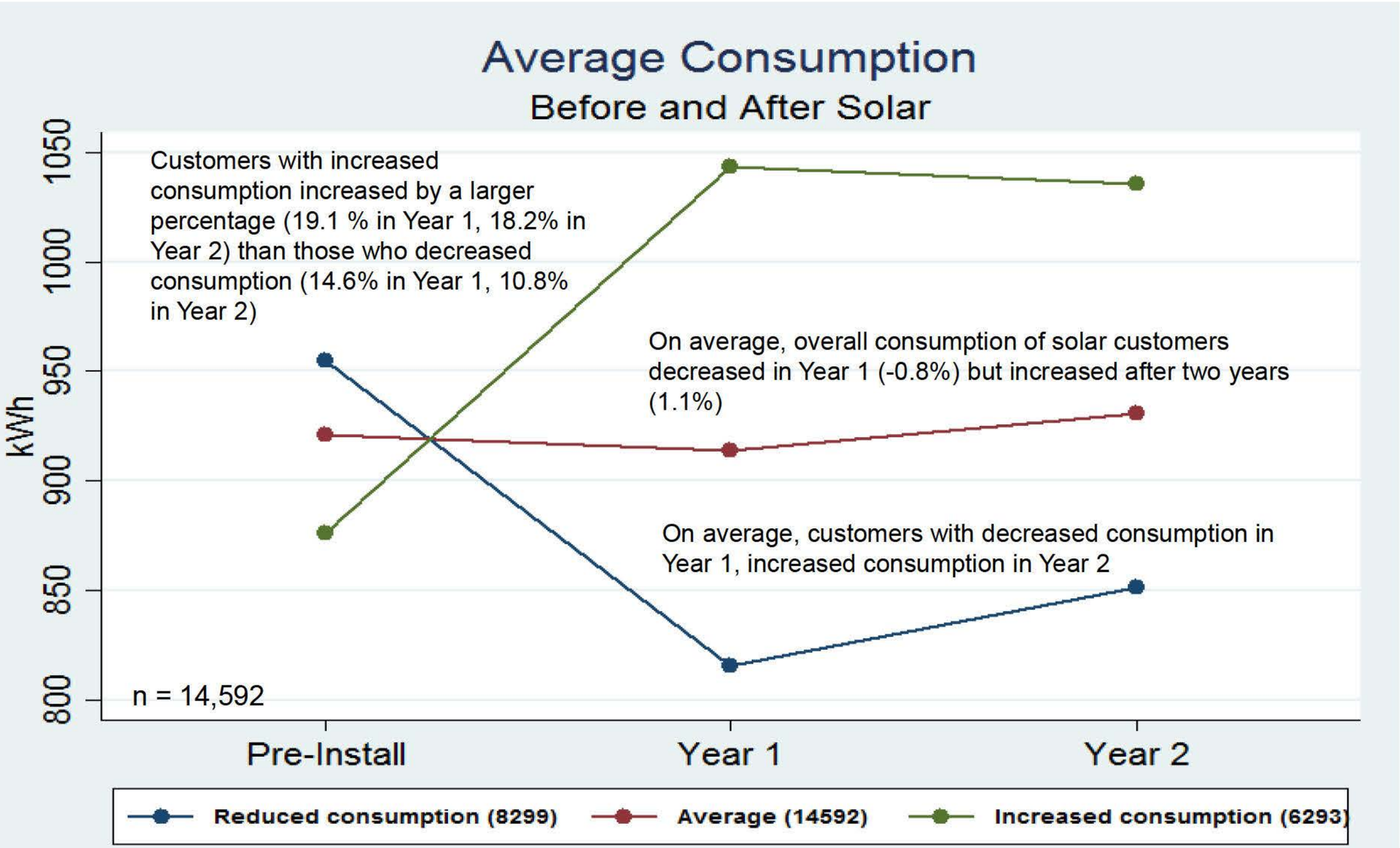
The Myth of the Average Customer

A holistic approach to rate architecture is needed to treat each customer fairly and avoid cost-shifting as customer needs continue to diversify

Residential Customer Before and After Solar

Net Energy Consumption after Solar Installation

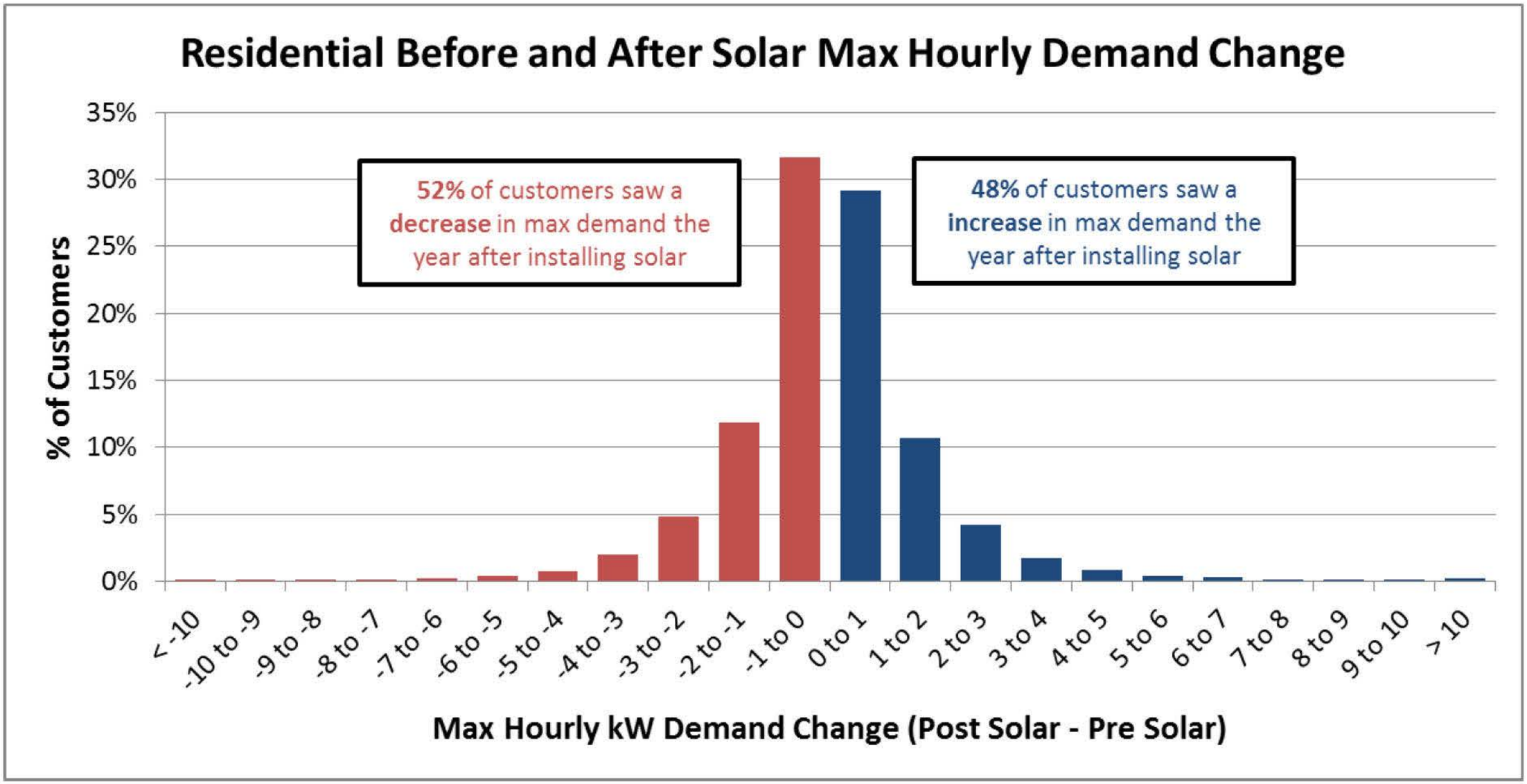
One year after the installation of solar, ***56.9% of customers decreased consumption*** and ***43.1% increased consumption***



Residential Customer Before and After Solar

Demand - 1 Year after Solar Installation

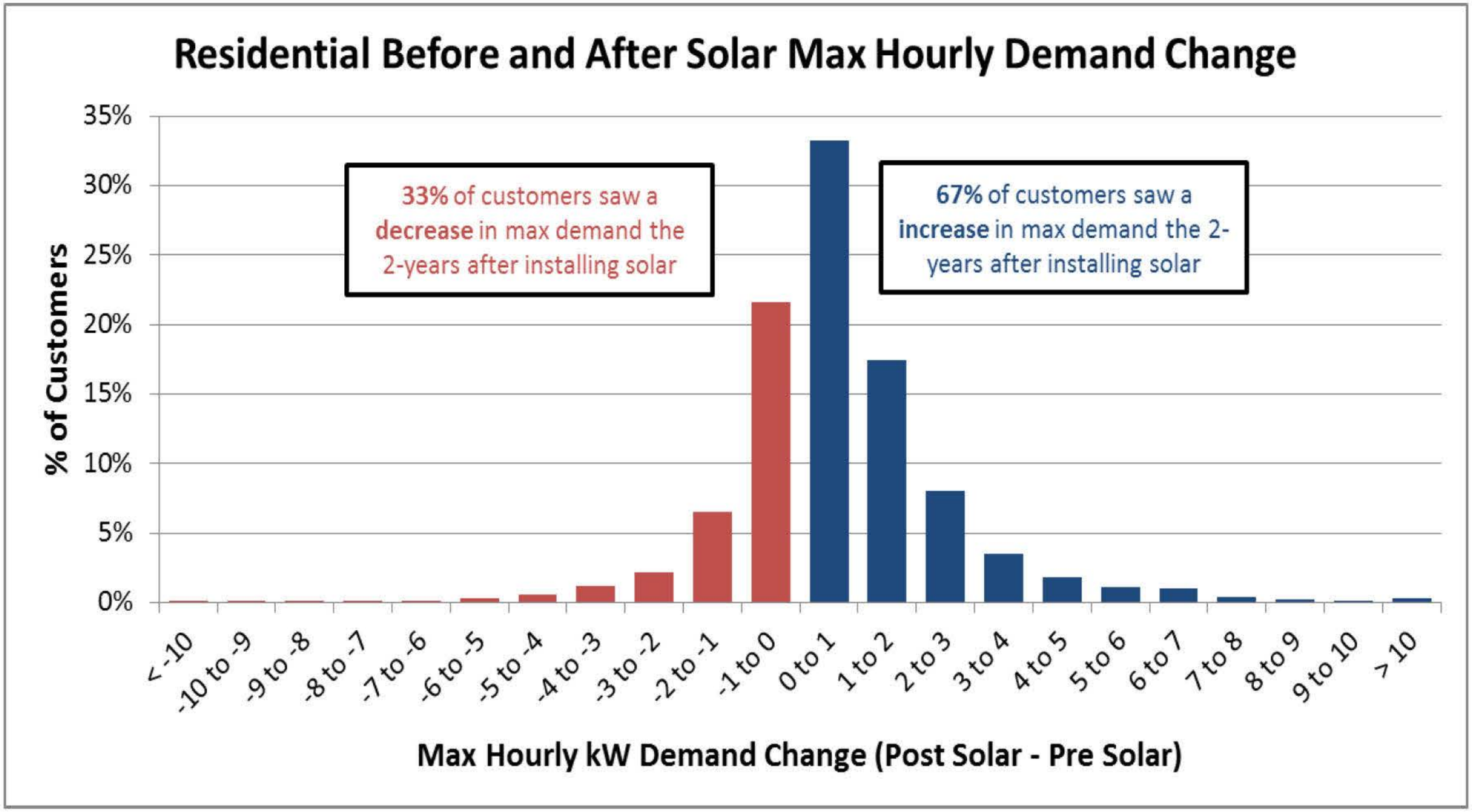
52% of residential customer with solar decreased maximum hourly demand by an average of 14% 1 year after installation, while **48%** **increased** their maximum hourly **demand** by an average of 17%



Residential Customer Before and After Solar

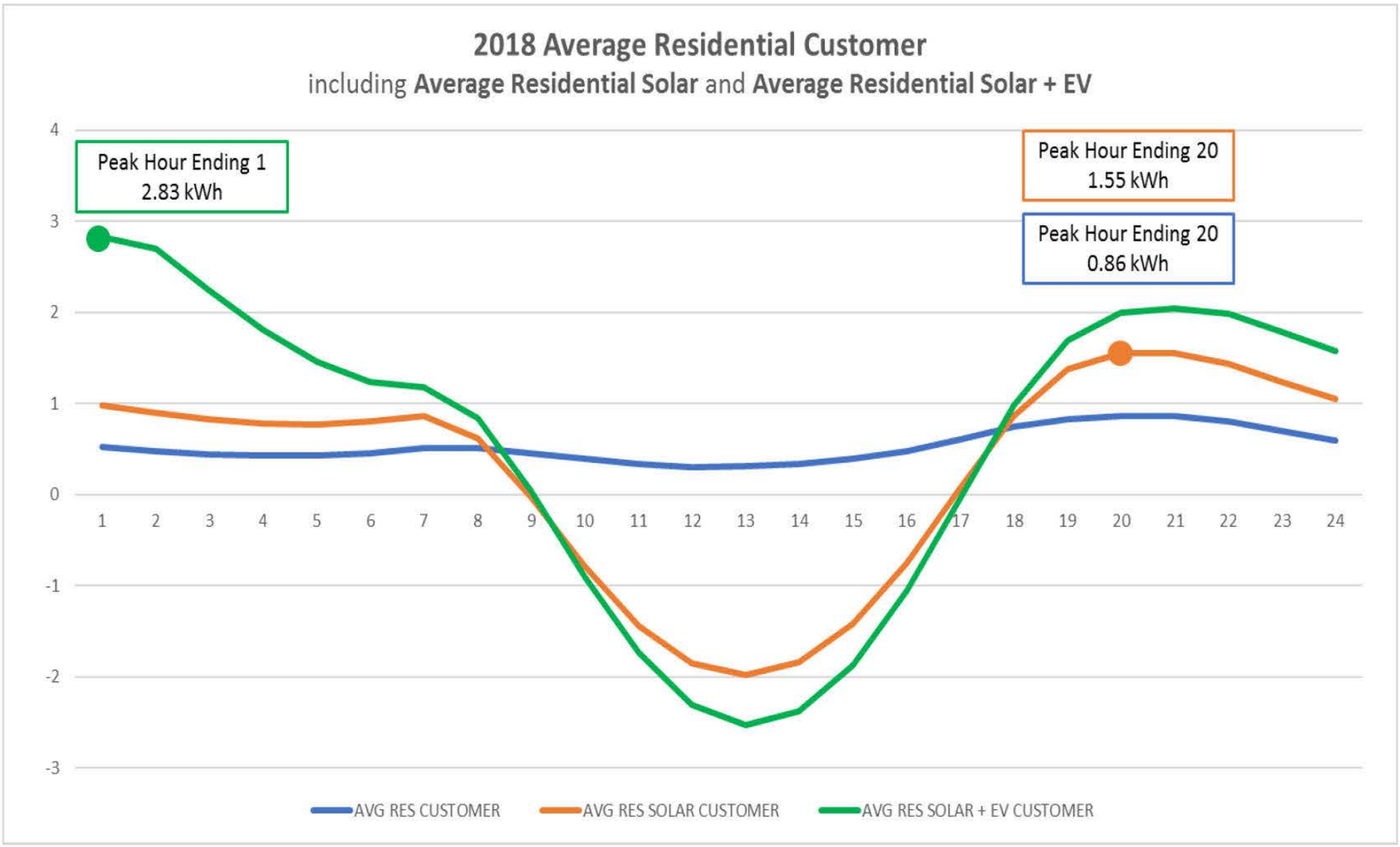
Demand - 2 Years after Solar Installation

33% of residential customer with solar decrease maximum hourly demand by an average of 14% 2 years after installation, while **67% increased** their maximum hourly **demand** by an average of 22%



Customer adoption is transforming customer energy needs

While the adoption of solar results in lower net consumption, the average residential customer with solar has significantly higher demand, over 80%, than the average residential customer. Customers with solar and EV have an average demand over 3 times the average residential customers.



The average residential customer has a peak of 0.86 kWh at 8 pm

The average residential solar customer has a peak of 1.55 kWh at 8pm

The average residential solar + EV customer has a peak of 2.83 kWh at 1am

Customer Adoption is a key driver behind SDG&E's Sales Forecast

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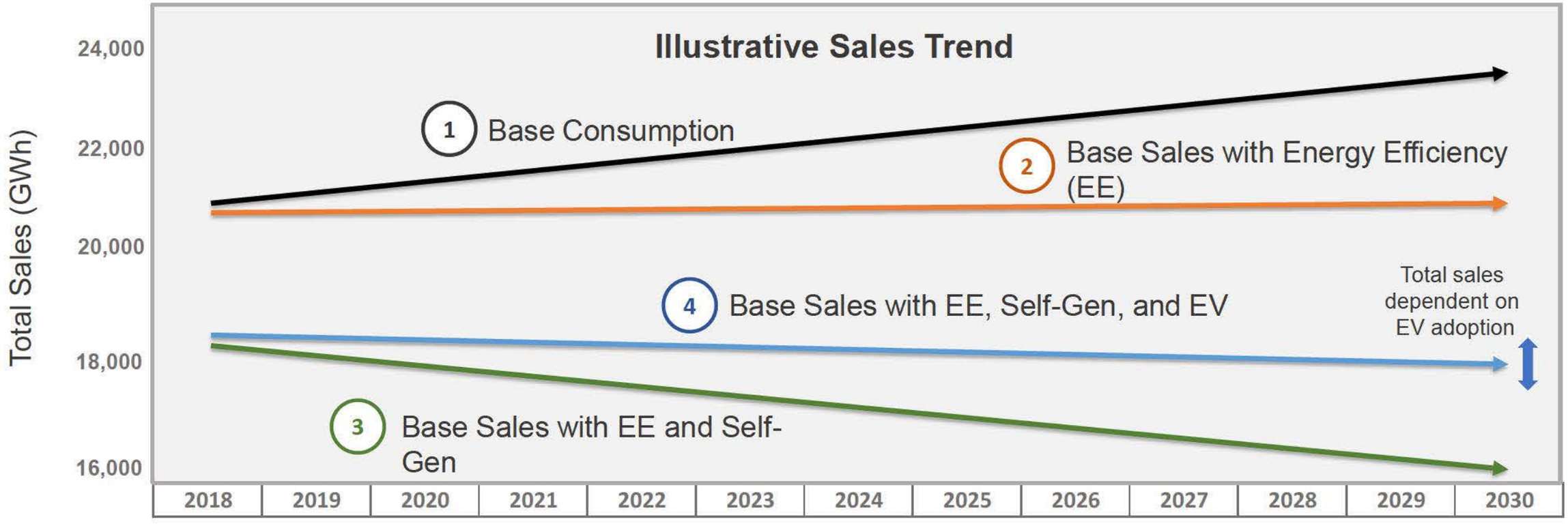
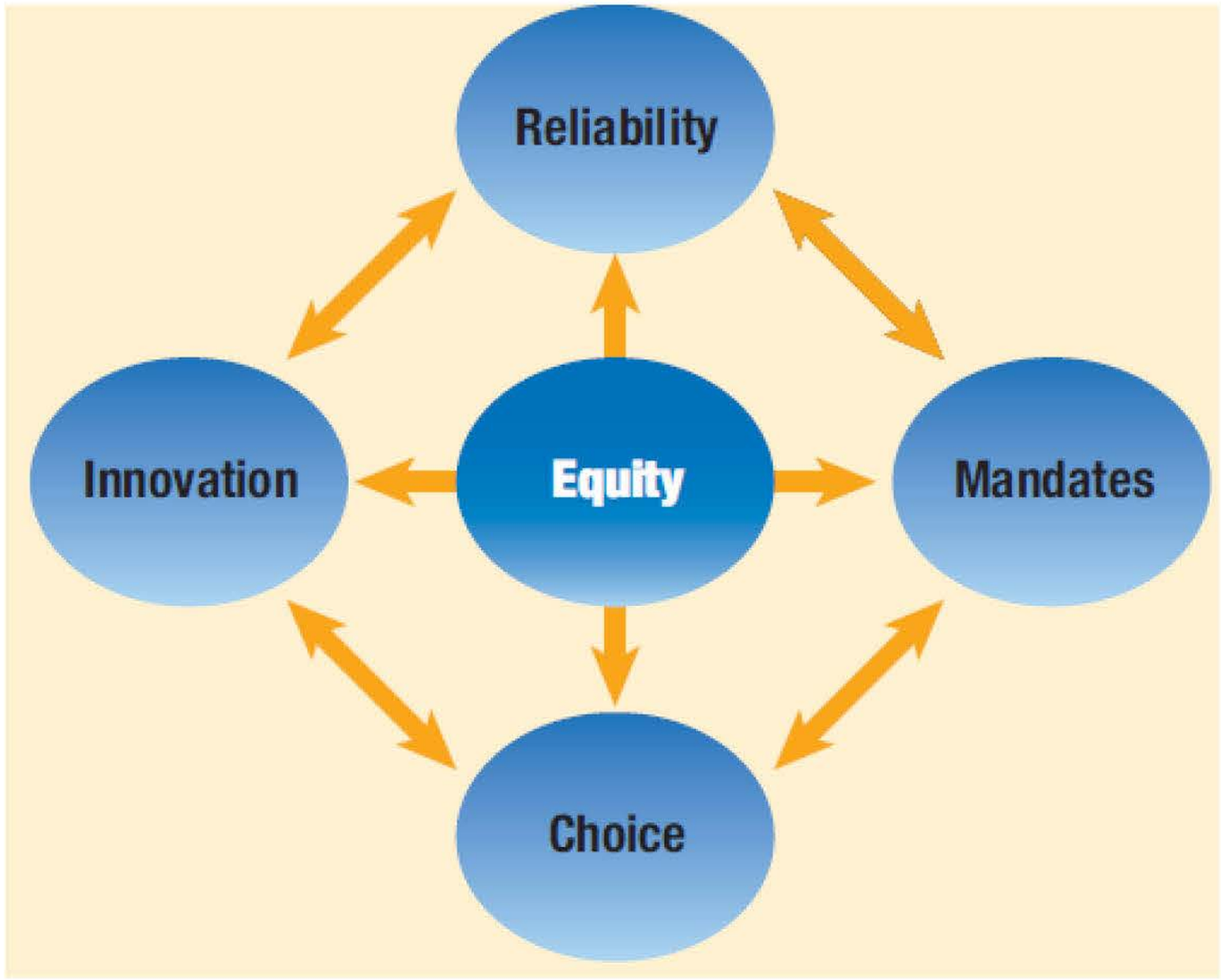
Customer adoption of energy efficiency (EE), solar (PV) and electric vehicles (EV) are primary drivers behind SDG&E's sales forecast

1.	Sales increase absent EE and self-generation	2.	Including EE causes sales to be relatively flat	3.	Self-generation results in declining future sales	4.	EV adoption mitigates decline or increases sales



Competing Priorities Put Pressure on Rate Design

Policy goals, customer engagement, and technology trends have encouraged the emergence of an increasingly decentralized landscape of consumers, retailers, and suppliers who engage with the electricity system in divergent ways, expect different levels of service and find value in distinct products and services



Key MRA Principles Informing Rate Design

Modern Rate Architecture Key Principles			
Transparency Costs are clearly allocated to products and services Subsidies are clear and measurable	**Equity** Maintain affordable average rates Rates are fair and minimize cost shifts Customers are credited appropriately for providing value	**Sustainability** Rates represent cost of service Customer pay for costs incurred on their behalf	**Access** Customer have options to manage their energy services Customers have equal access to options

New Rate Architecture Needed

A new rate architecture is needed to address technology evolution and customer choice in a way that clearly identifies the value of utility services distinct from the costs and benefits of policy mandates

Value of Utility Services

Policy Premium

Services

- Meter installation
- Metering and billing services
- Customer service
- Emergency response

Grid Access

- Distribution and transmission of energy
- Level access to energy
- Conveyance of energy from customer-owned DER

Energy

- Competitive generation or CCA
- IOU energy supply

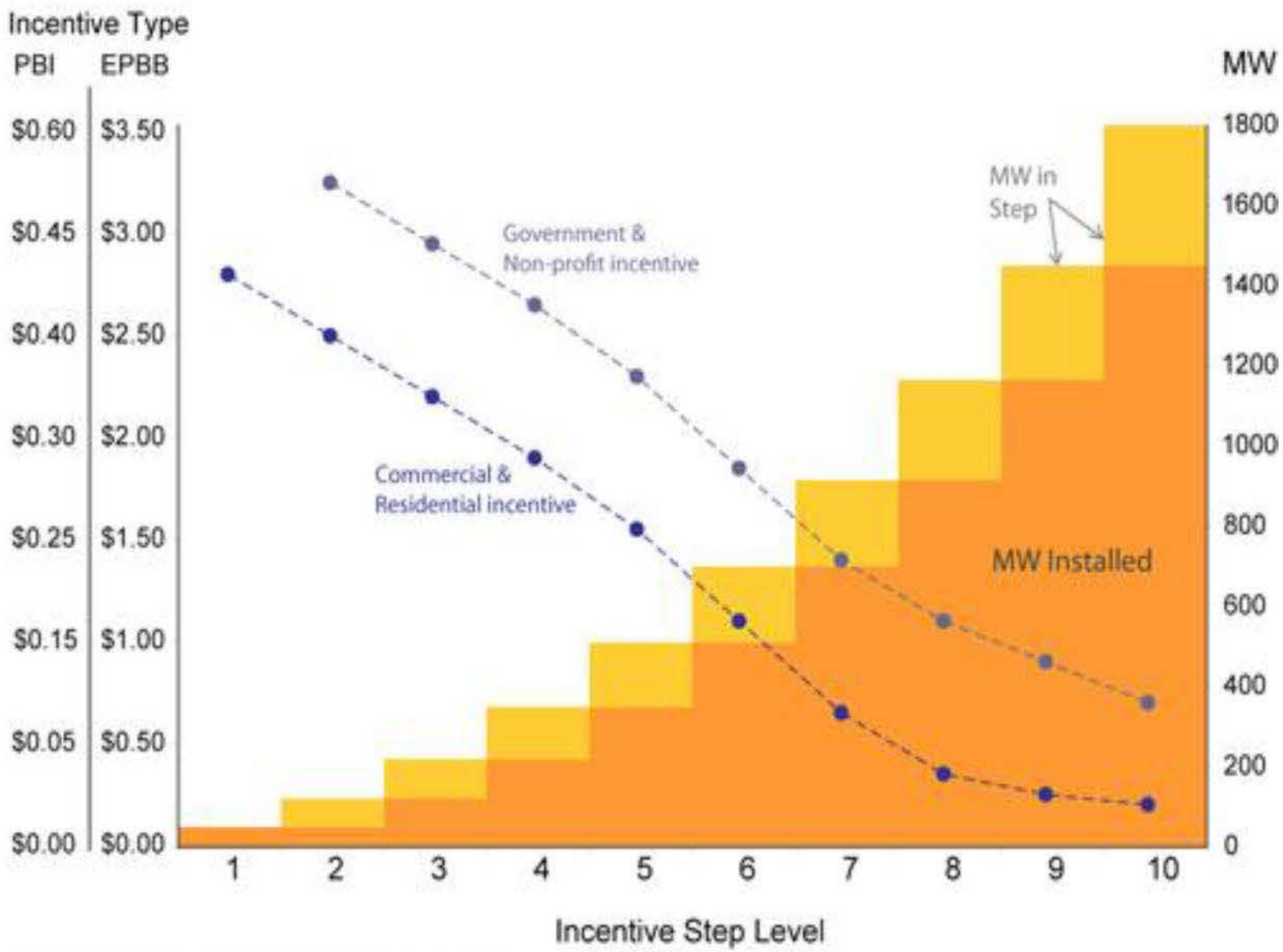
Policy Mandates

- Policies for socio-economic justice (CARE)
- Payments for explicit CA subsidies to support policy goals (NEM)

Case Study: California Solar Initiative

A sustainable policy subsidy is direct and transparent and declines as policy objectives are achieved

CSI Incentives Declined as the Program Progressed



PBI: Performance Based Incentive, paid over 5 years, in $ / kWh
EPBB: Expected Performance Based Buydown, paid upfront, in $ / W