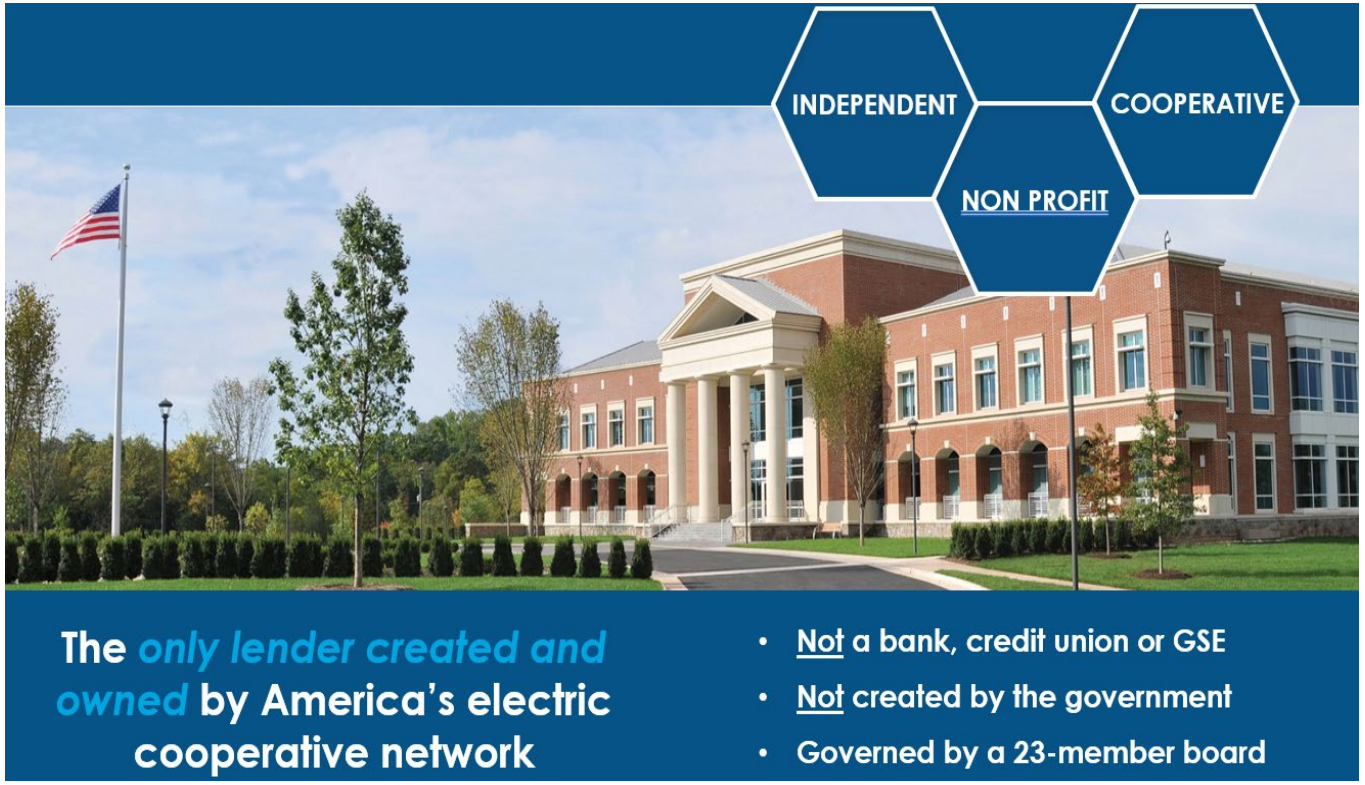
From Simplicity to Sophistication: A Look at Residential Rate Design

63rd Annual Rural Energy Conference
Midwest Rural Energy Council
February 12, 2026

Jason Strong, Vice President of Utility Pricing, Policy & Analytics

***The views and opinions presented are those of the presenter(s) and may not necessarily be those of CFC.*

Cooperative Finance Corporation



Electric Cooperative Network

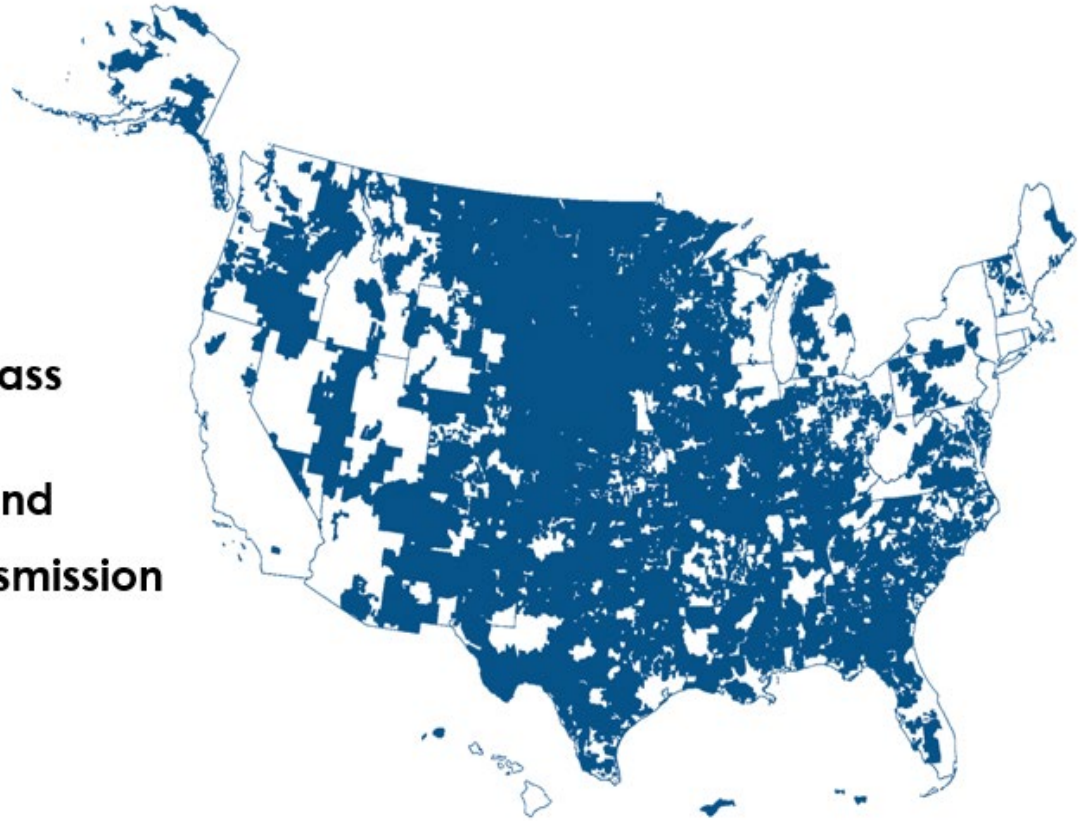
- **Ownership Models**
  - Investor-Owned Utilities (IOUs): 72% of Customers
  - Publicly-Owned Utilities (POUs/Munis)
  - Electric Cooperatives

	INVESTOR OWNED (IOU)	*Publicly owned utilities (POU)* MUNICIPAL (MUNI)	COOPERATIVE (COOP)
Business model	$ For-profit	Not for-profit	Not for-profit
Ownership	Shareholders	Municipality	Ratepayers
Rate regulator	State	Board	Board
	sometimes →	State	State

Source: APPA

56%

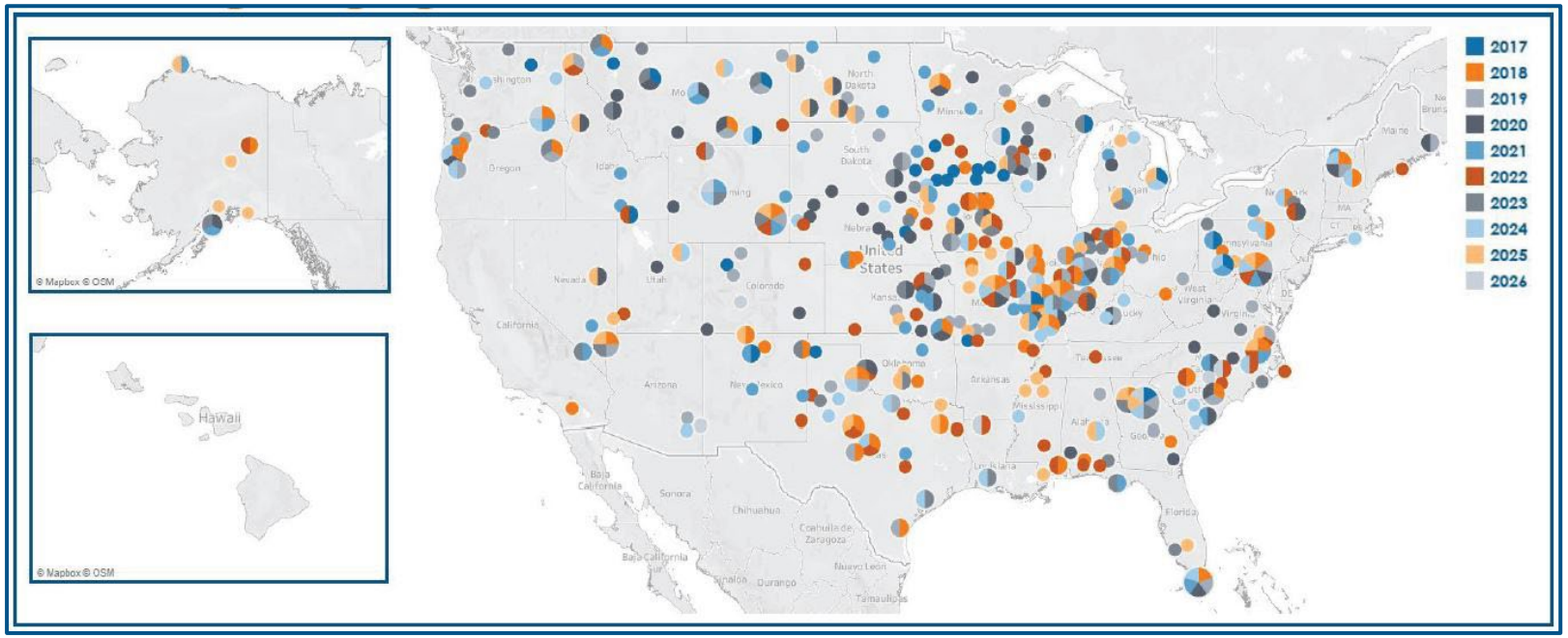
Of the nation's landmass is powered by 832 distribution and 64 generation & transmission cooperatives.



Where We've Made A Difference

Utility Pricing, Policy & Analytics

Cooperative Network Consulting Engagements



41	400+	200+	100+
Consulting engagements covering 41 States	Consulting engagements across more than 250 distribution and G&T cooperatives	Consulting engagements utilizing more than 200 sets of AMI meter data	More than 100 presentations and trainings annually

Presentation Overview

1. Ratemaking Process Overview
2. Load Research & Ratemaking (AMI Meter Data)
3. Present Environment & Rate Trends

Ratemaking Process Overview

Ratemaking Steps

Revenue Requirement (How Much?)

- **Suggests Operating Revenue & Patronage Capital to Meet Prudent (1) Operating Expenses; and (2) Financial Goals (Debt Service, Margins, Equity Levels, Plant Additions & Patronage Capital Retirement)**

Cost of Service (From Whom?)

- **Analysis to evaluate and allocate the costs of providing utility service among different service classes**
  - Identifies Cost to Serve Each Rate Classification (Cost Causation)
  - Identifies Existing Subsidies (and Magnitude) Between Rate Classifications
  - Identifies Cost-Based (Unit-Based) Rate Structure

Rate Design (How?)

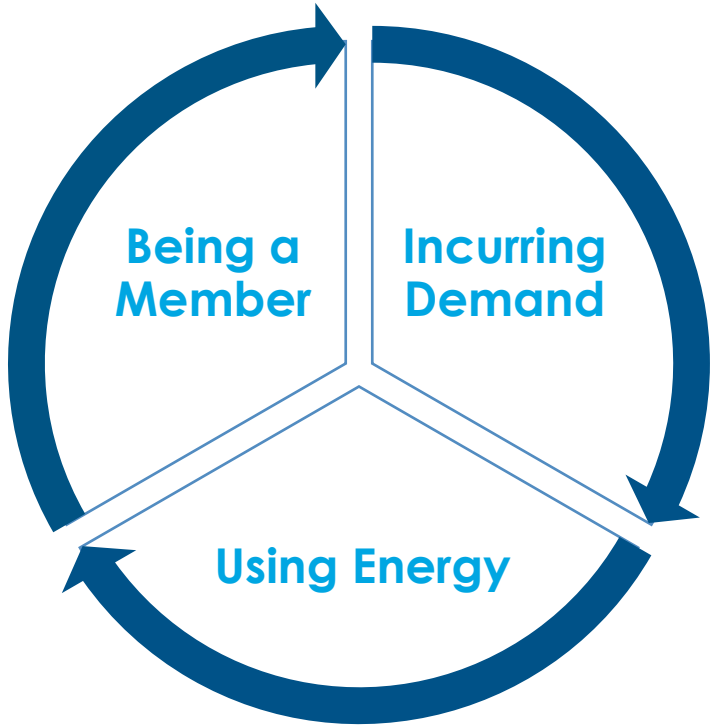
- **Revenues to Collect from Each Rate Classification**
- **Cost of Service Guides Rate Design by Aligning Costs & Revenue Collection**
- **Cost of Service Provides Insights to More Precisely Apply Rate Increase/ Rate Re-Design to Align with Rate Policy**

Cost of Service Study (From Whom?)

A process which assigns costs to the classes of members to determine who incurred the costs.

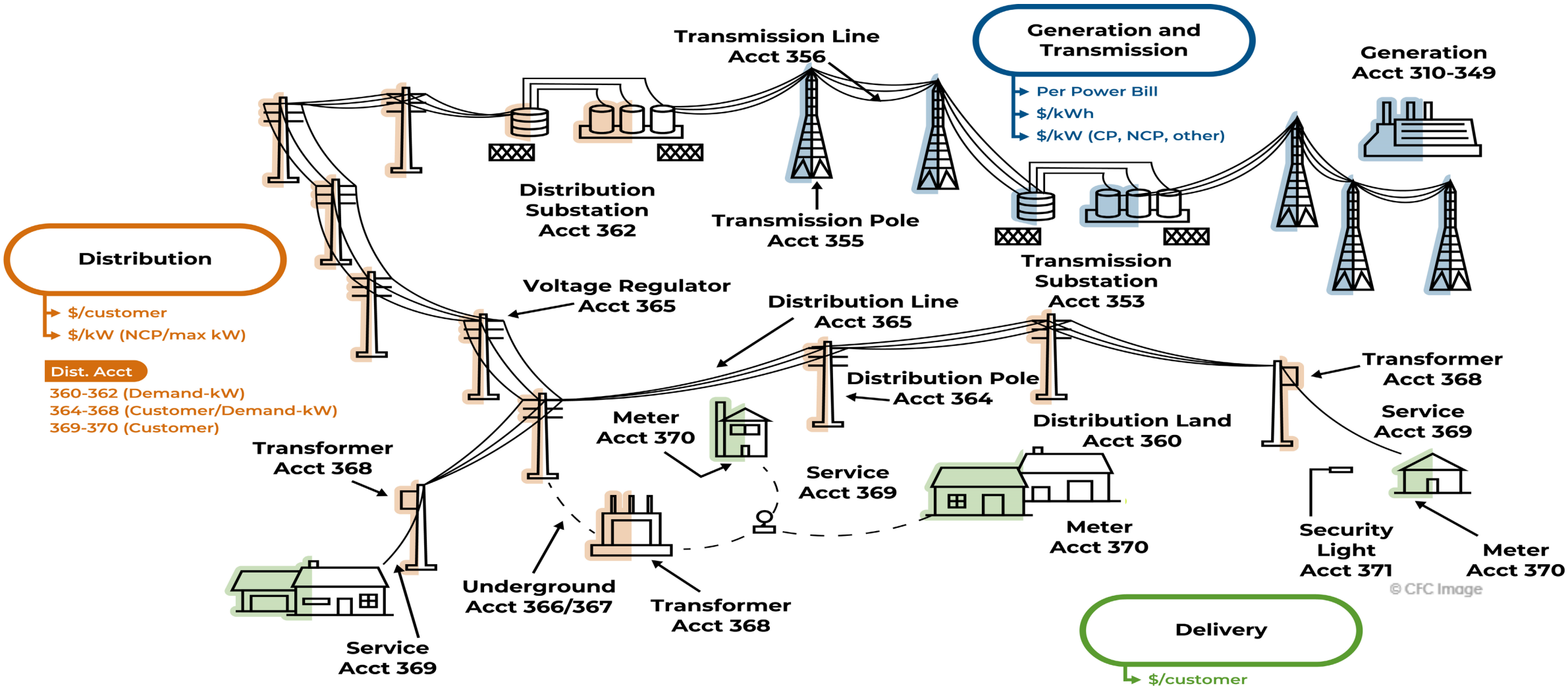
Cost Causation

How are costs incurred on an electric system?



Costs are incurred by:

- Being a member-customer (Connectivity to Grid)
- By incurring demand (kW) (Distribution & Purchased Power)
- By using energy



Note: Each plant account has an associated operation & maintenance (O&M) account(s) in the FERC/RUS US of A . Plant and associated O&M are generally functionalized, classified, and allocated in the same manner.

Utility Tariffs Do Not Reflect Utility Cost Structures

Cost Categories	Cost Based or Policy	Actual Bill
Fixed ($/Customer): • Metering & Billing • Customer Service • Meter & Service Drop • Portion of Distribution System for Connectivity (No Load)	Fixed = $60	Fixed = $35
Capacity-Related (Demand) (kW) Distribution System: • Distribution Capacity • Portion of Distribution System Sized to Meet Peak Loads	Demand = $25	
Capacity-Related (Demand) (kW) Generation/Purchased Power: • Transmission Capacity • Generation Capacity • Sized to Meet Peak Loads	Demand = $100	
Variable (Energy) (kWh): • Fuel • Operations & Maintenance	Variable = $40	Variable = $190

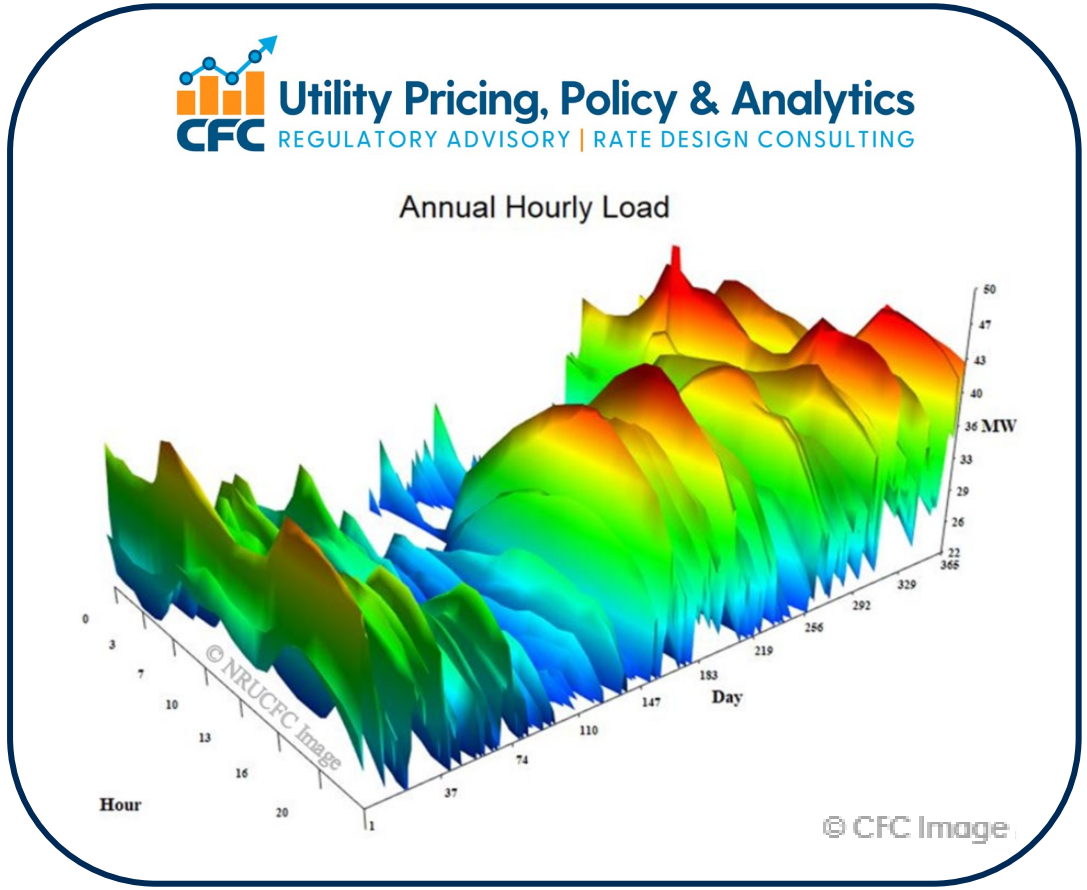
*Illustrative Example Only, Total Bill ($225) Based on Typical Residential Usage

AMI Interval Data in Load Research & Ratemaking

Potential Benefits of AMI Smart Meters

Leveraging AMI Data in Load Research & Ratemaking

- Simplifying Complex Decisions with Data Science
- Precise Assignment of Costs
  - Cost of Service Time Varying Energy & Demand Allocations
  - Cost of Distributed Generation
  - Cost Causation vs. Cost Recovery
- Load Research
  - Usage Characteristics (Homogenous Load Profiles)
  - Load Forecasting & Weatherization
  - Customer Segmentation
  - Program Demographics
  - Connecting Customers with Programs
  - Measuring Program Performance & Forecasting Adoption
- Rate Design
  - Evolving Rate Policy Goals
  - Dynamic Pricing
  - Electric Vehicle Charging Rates
  - Consumer Preferences & New Technologies



Foundation & Governance

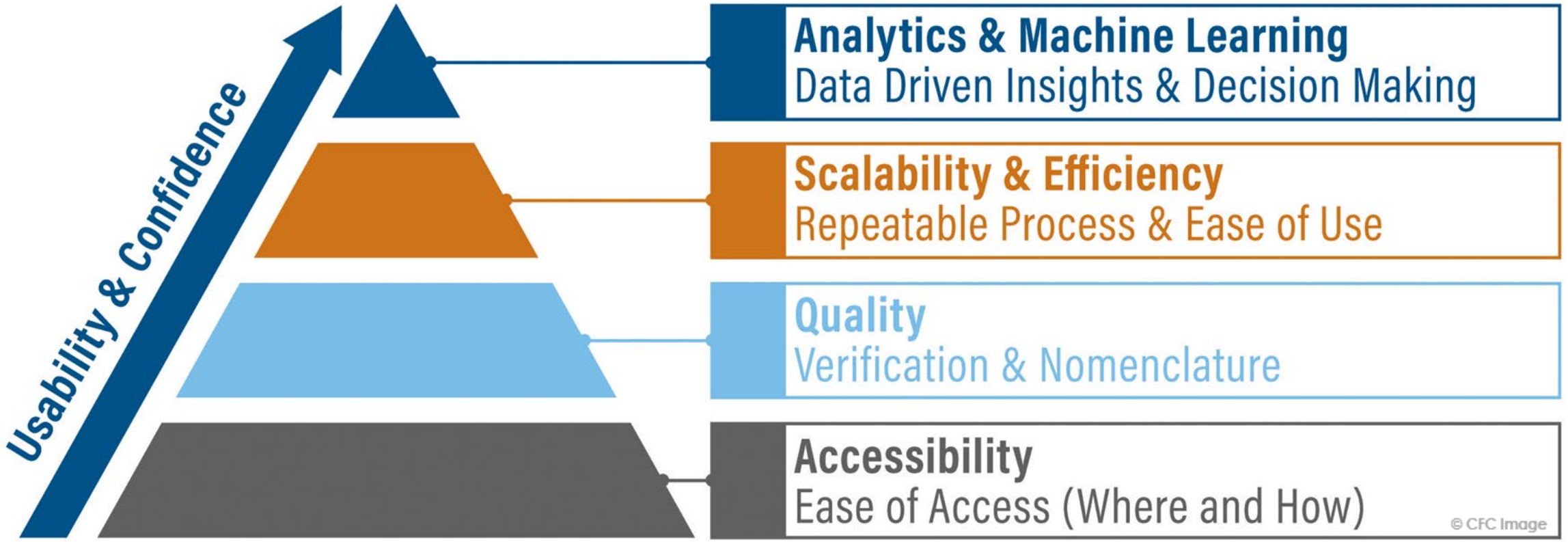


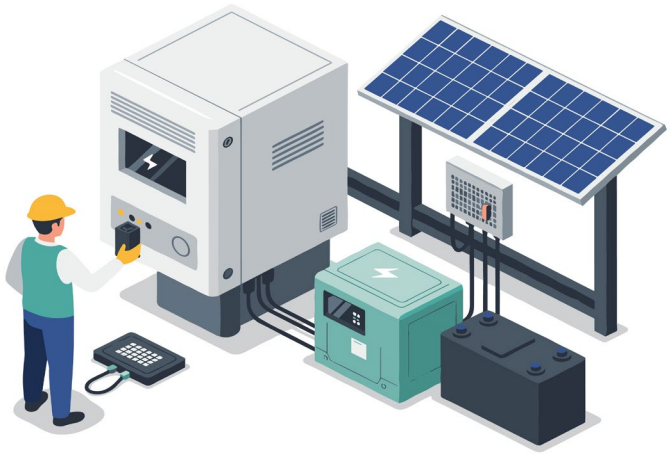
FIGURE 3: Four Levels of Data Governance. SOURCE: CFC.

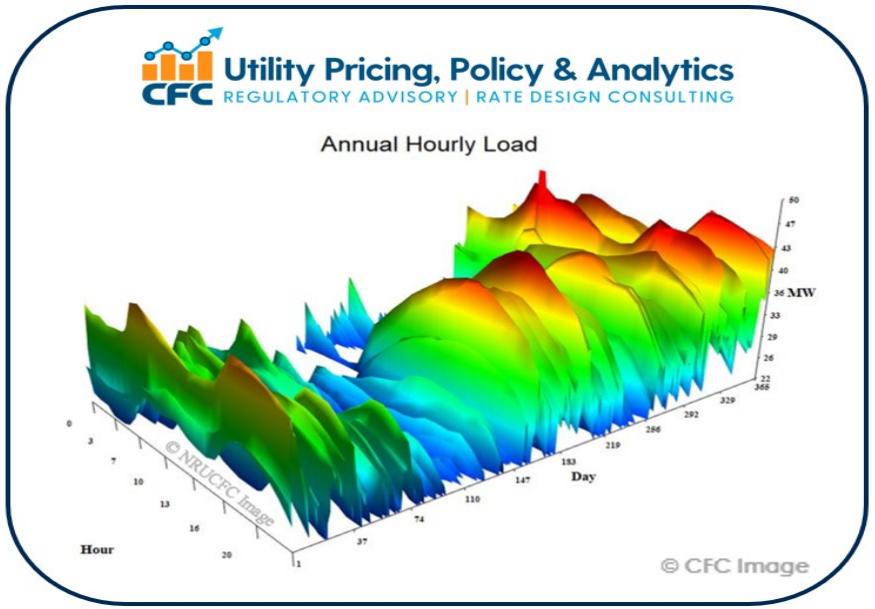
CFC Utility Pricing, Policy & Analytics
Regulatory Advisory | Rate Design Consulting

AMI Data in Load Research & Ratemaking

The Present Environment & Rate Design Trends

What are the Major Disruptors?



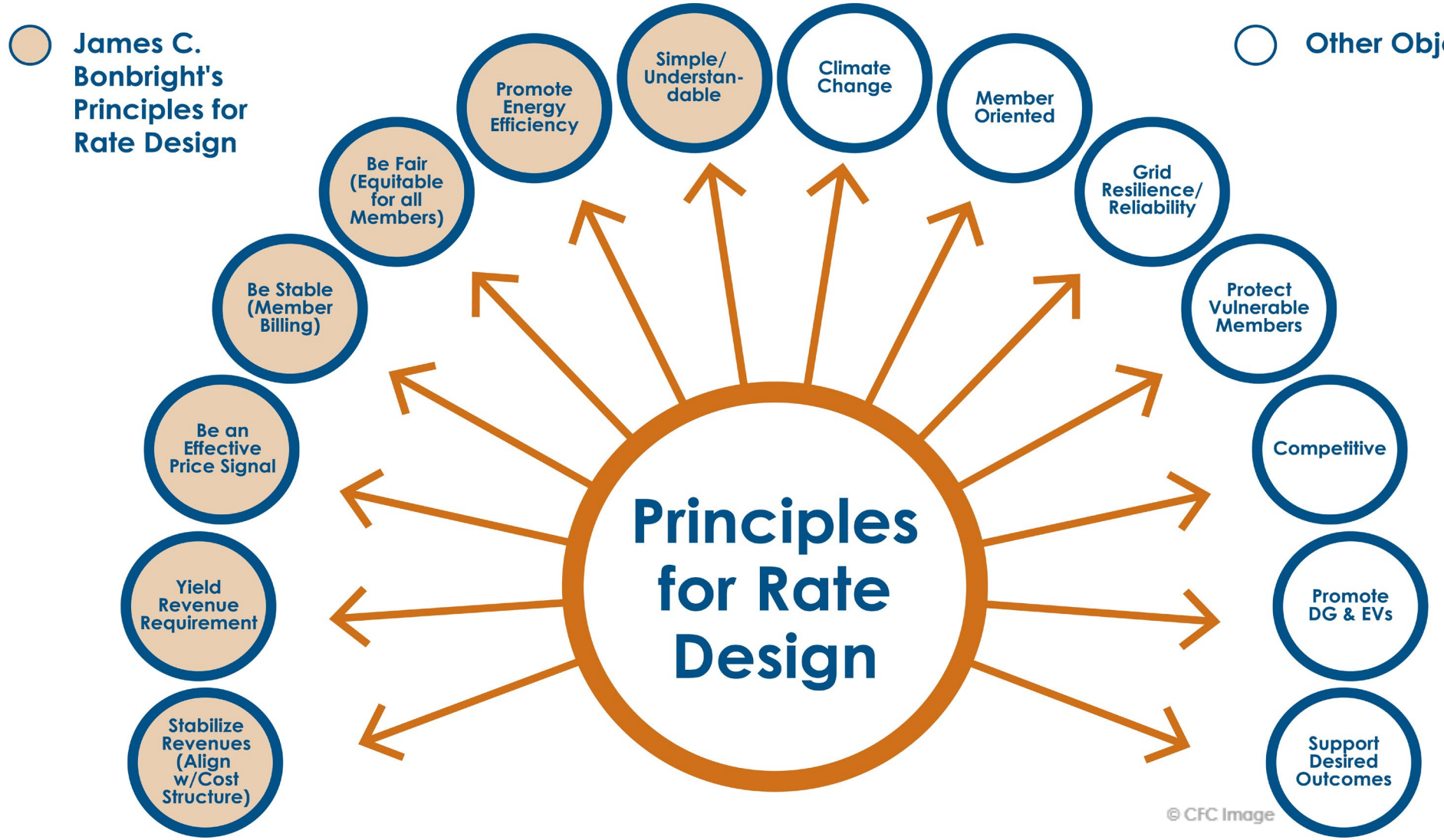


- AMI Smart Meters/Digital Transformation
- Consumer Preferences
  - Services, Rates & Affordability
- Slowing/Growing Growth Rates (Data Centers)
- Cost Pressures (Inflation & Capital Expenditures)
- Power Supply Rate Increases & Rate Re-Design
  - Assign Cost by Hour in Cost of Service
  - Designing Time-of-Use Rates to Shave Peaks
- Distributed Generation
  - Pressure to Properly Recover Costs
  - Balance between Equity/Fairness and Promoting Adoption
- Electric Vehicles
  - Shift Load to "Off-Peak" Lower Cost Periods
- Schools of Thought & Rate Philosophy
  - Public Policy vs. Historical Methods/Practices
  - Cost Recovery vs. Causation

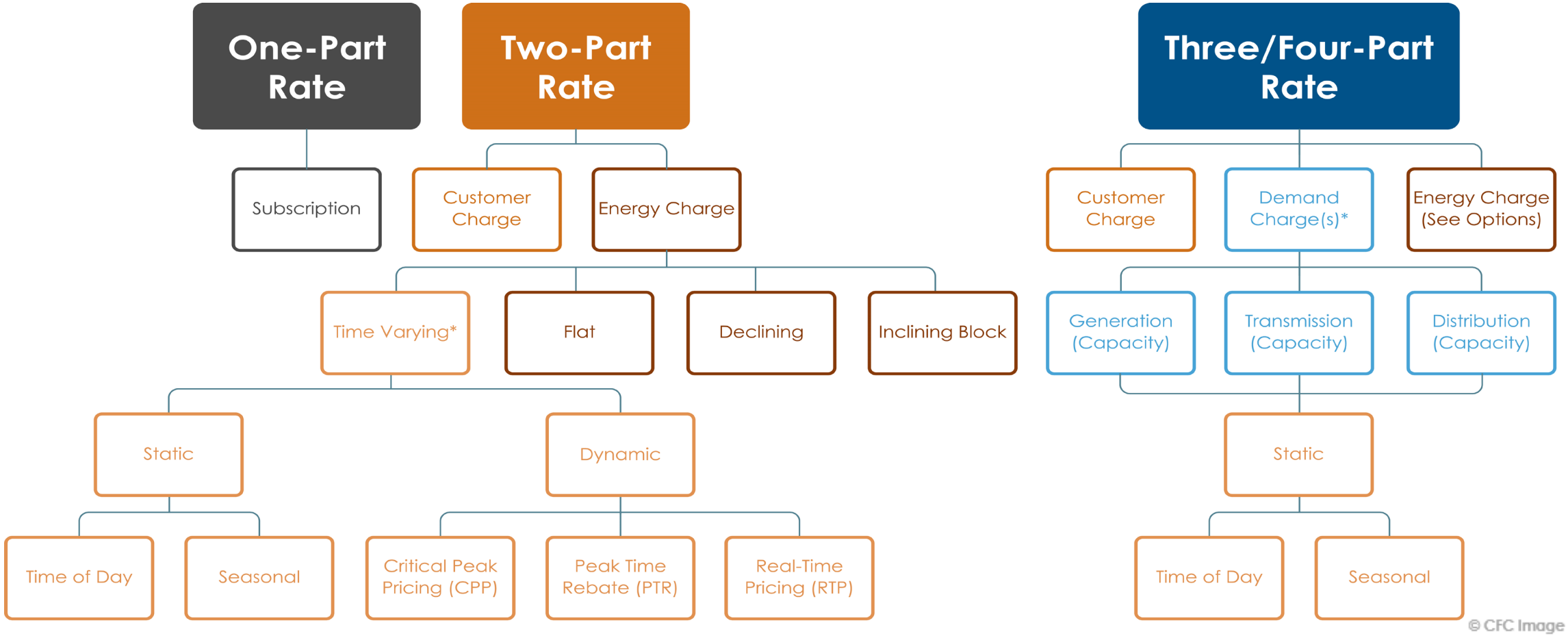
Ratemaking is Part Art & Part Science

- Subjective - Key concepts provide a foundation but reasonable people can disagree
- Involves both economic analysis as well as public policy decision making
- Rates—Defendable, design based on data
- Cost Causality vs. Cost Socialization

Rate Design Goals



Rate Making Menu

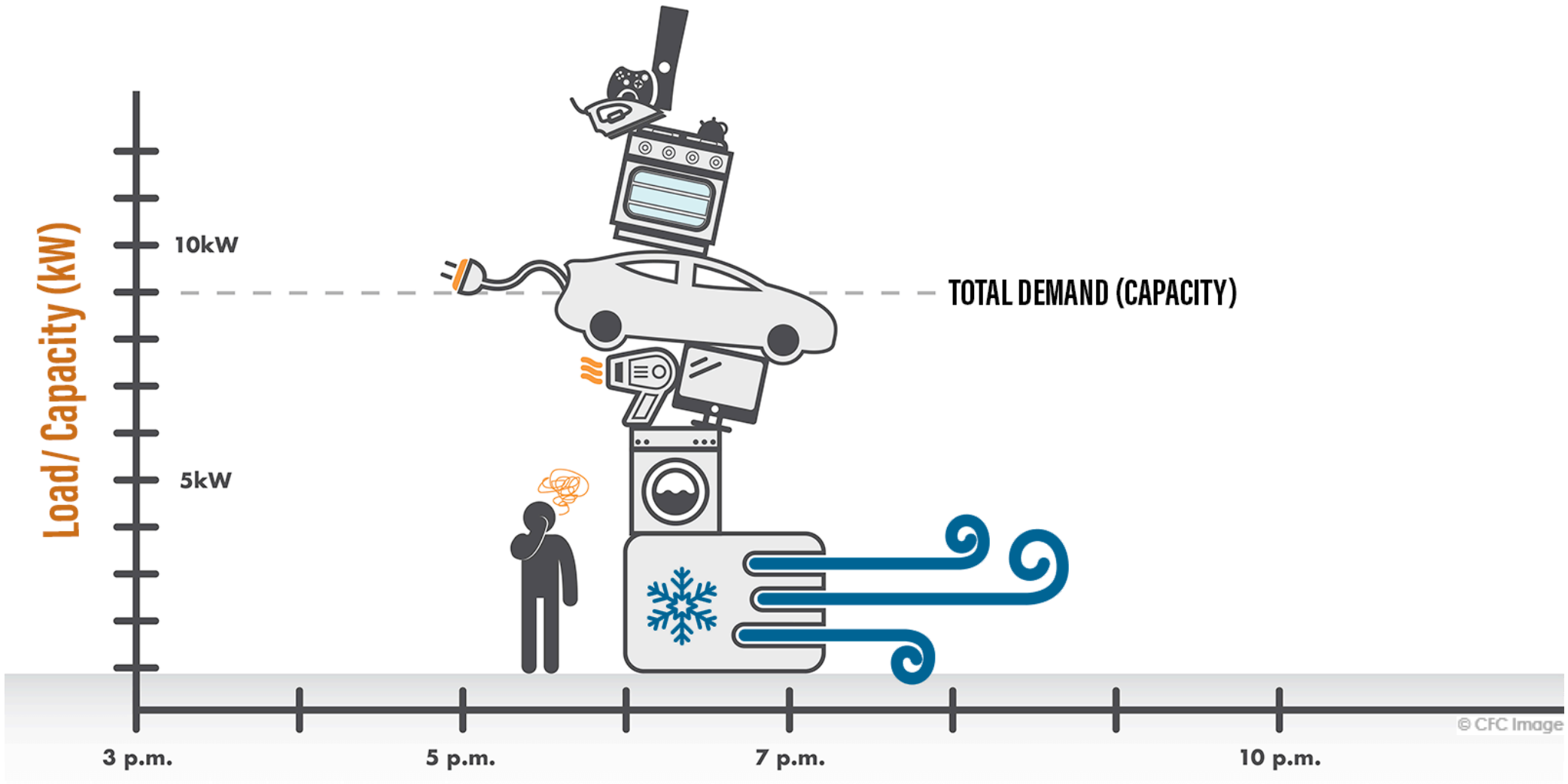


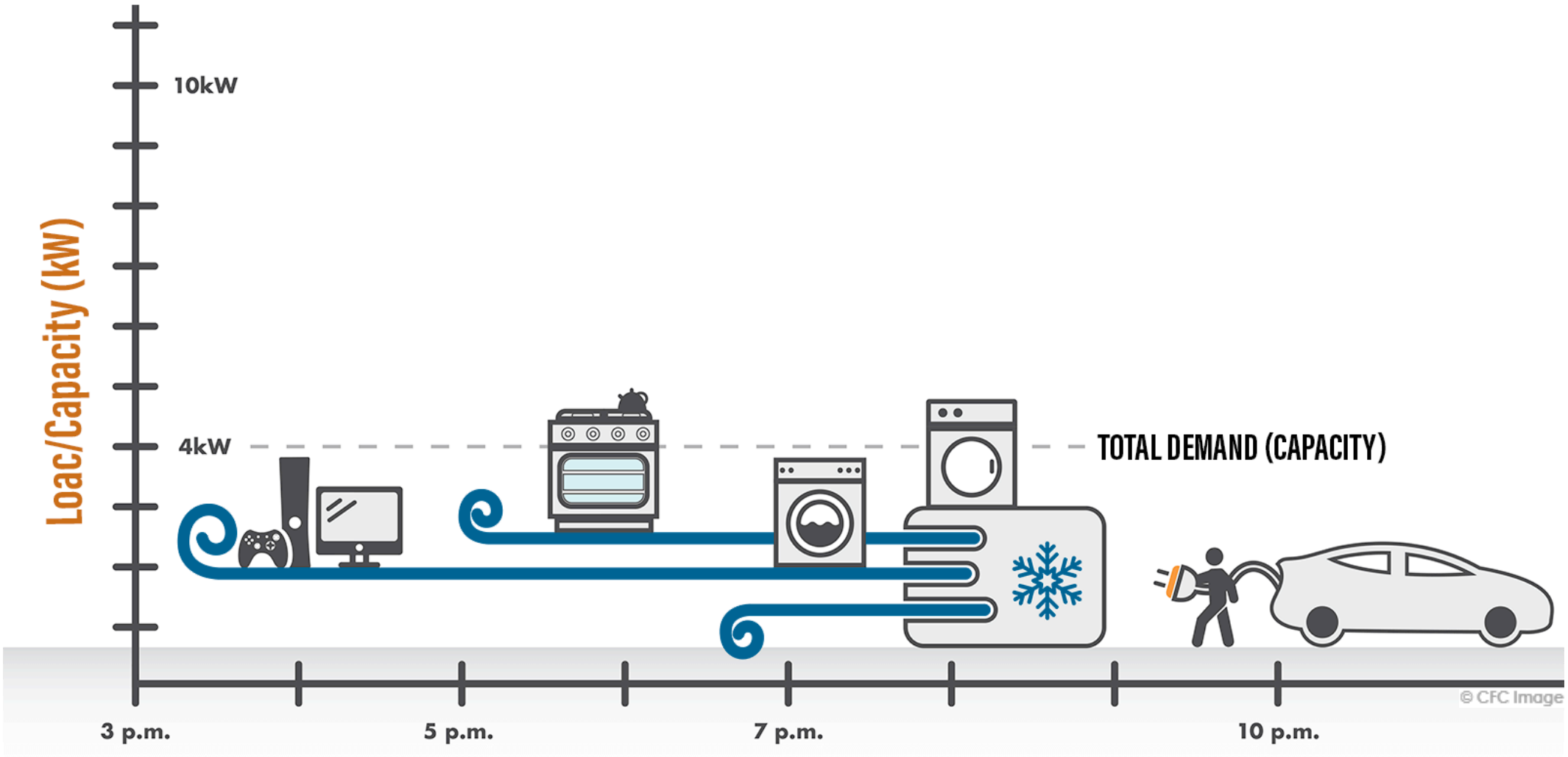
***AMI (hourly/sub-hourly) data required for these types of rate design.**

Demand Charges: Why?

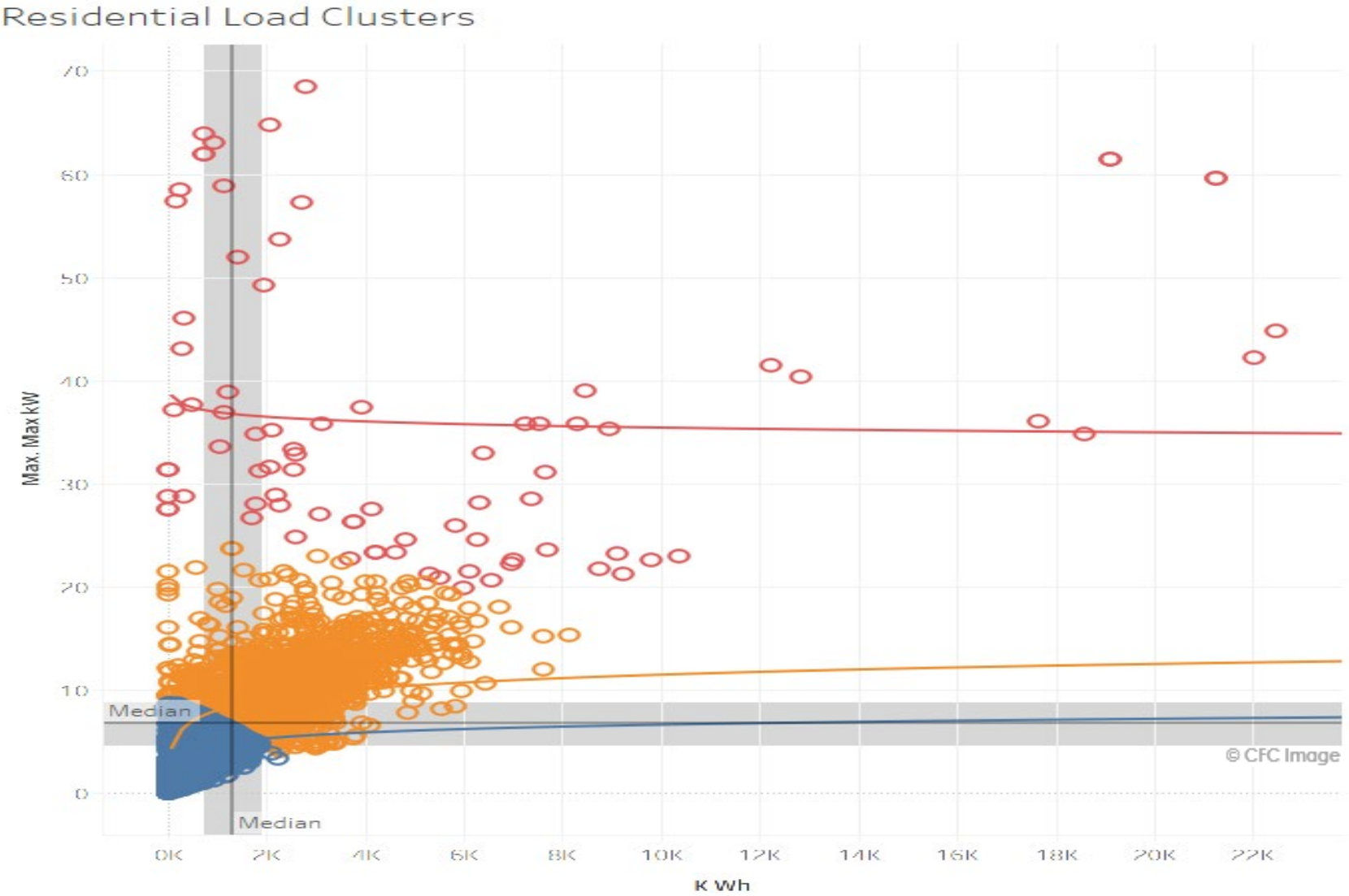
- Recover fixed costs each month
- Reduce impact of weather
- ***Reduce intraclass subsidization***
- Reduce volatility in customer's bill
- Reduce Reliance on Sales
- ***Distributed Generation***
- Cost Recovery & Cost Pressures
- Cost Causation

- Rate design begins with distinguishing between fixed & variable costs
- Informs but does not decide.

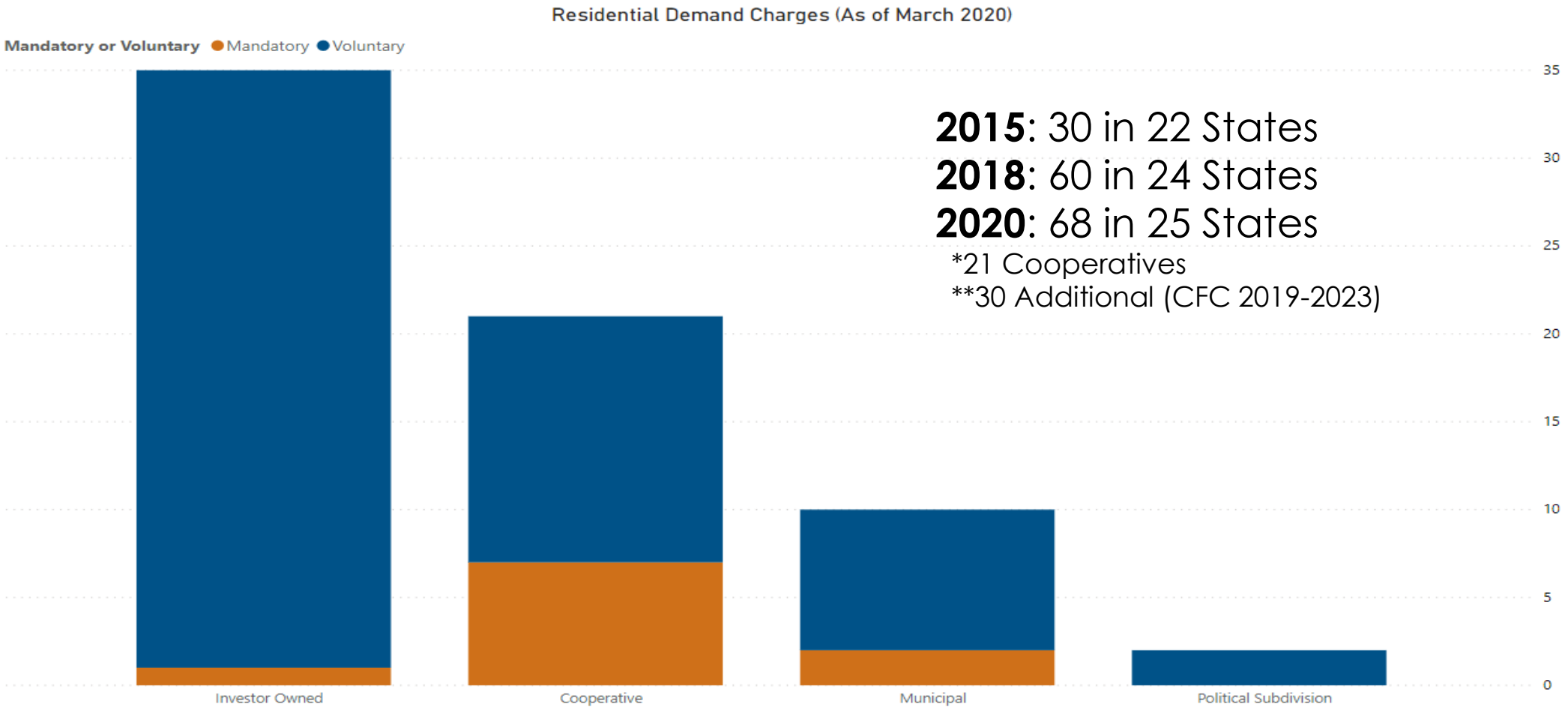

Load/ Capacity (kW)
10kW
5kW
TOTAL DEMAND (CAPACITY)
© CFC Image
3 p.m.
5 p.m.
7 p.m.
10 p.m.


Loac/Capacity (kW)
10kW
4kW
TOTAL DEMAND (CAPACITY)
© CFC Image
3 p.m.
5 p.m.
7 p.m.
10 p.m.

A Case for Demand Charges: Load Dispersion

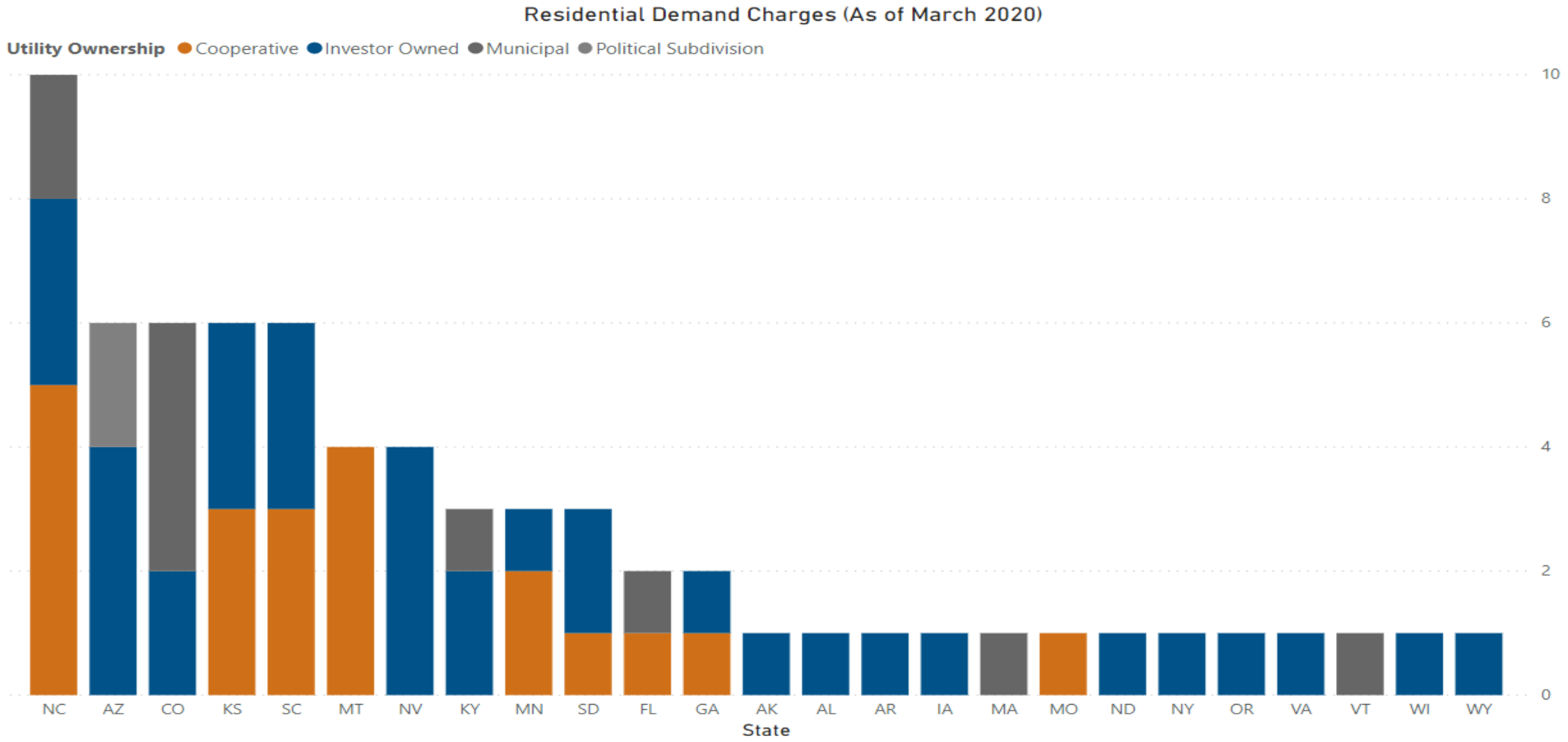


Current Residential Demand Charges

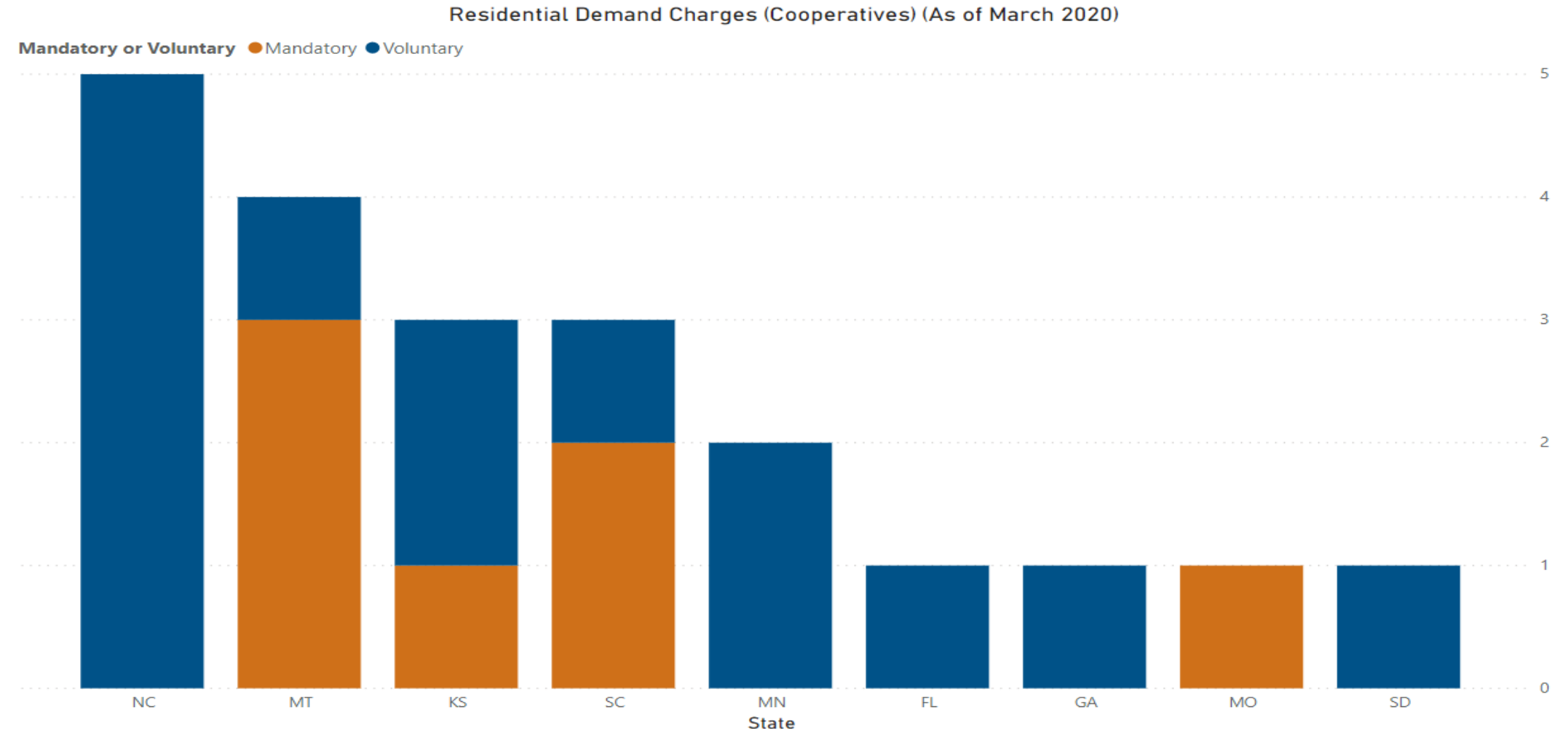


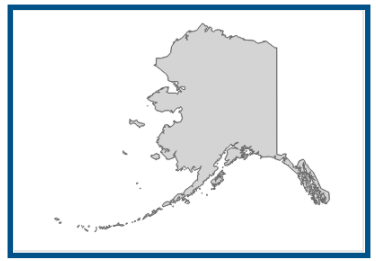
2015: 30 in 22 States
2018: 60 in 24 States
2020: 68 in 25 States
*21 Cooperatives
**30 Additional (CFC 2019-2023)

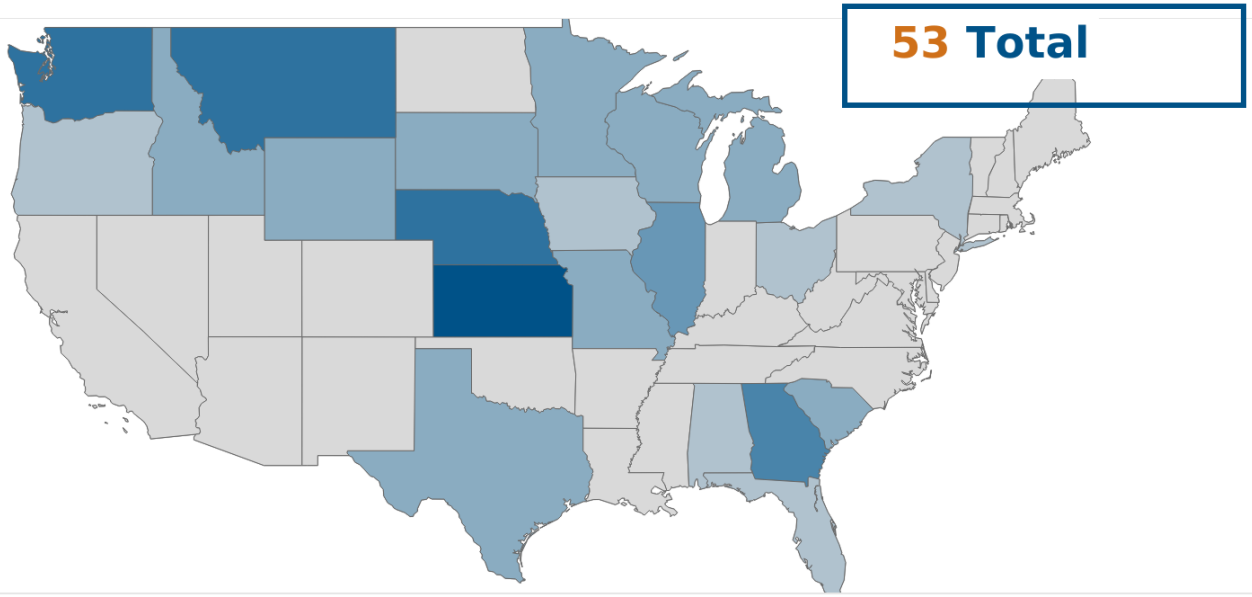
Current Residential Demand Charges



Current Residential Demand Charges



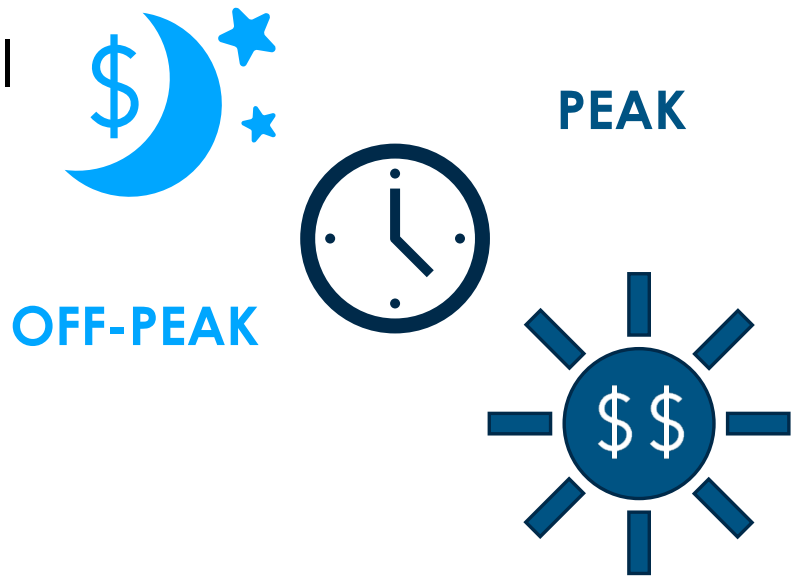



53 Total


8
6
4
2
0
KS
WA
NE
MT
GA
IL
WY
WI
TX
SD
SC
MO
MN
MI
ID
OR
OH
NY
IA
FL
AL
VT
VA
UT
TN
RI
PA
OK
NV
NM
NH
ND
NC
MS
ME
LA
KY
IN
DC
CO
CA
AZ
AR
AK
WV
Null
NJ
MD
MA
HI
DE
CT

What is a Time-Varying Rate?

- Recognizes differences in costs relative to time
- Reflects varying costs of supplying electricity across the day, month, season (Demand and/or Energy)
- Opportunity for Utility & Consumers to realize cost savings
  - Markets vs. PPAs (Full Requirements)?
  - Future Generation Mix & Price Differential
- Bundled vs. Unbundled



What Costs Can be Time-Differentiated?

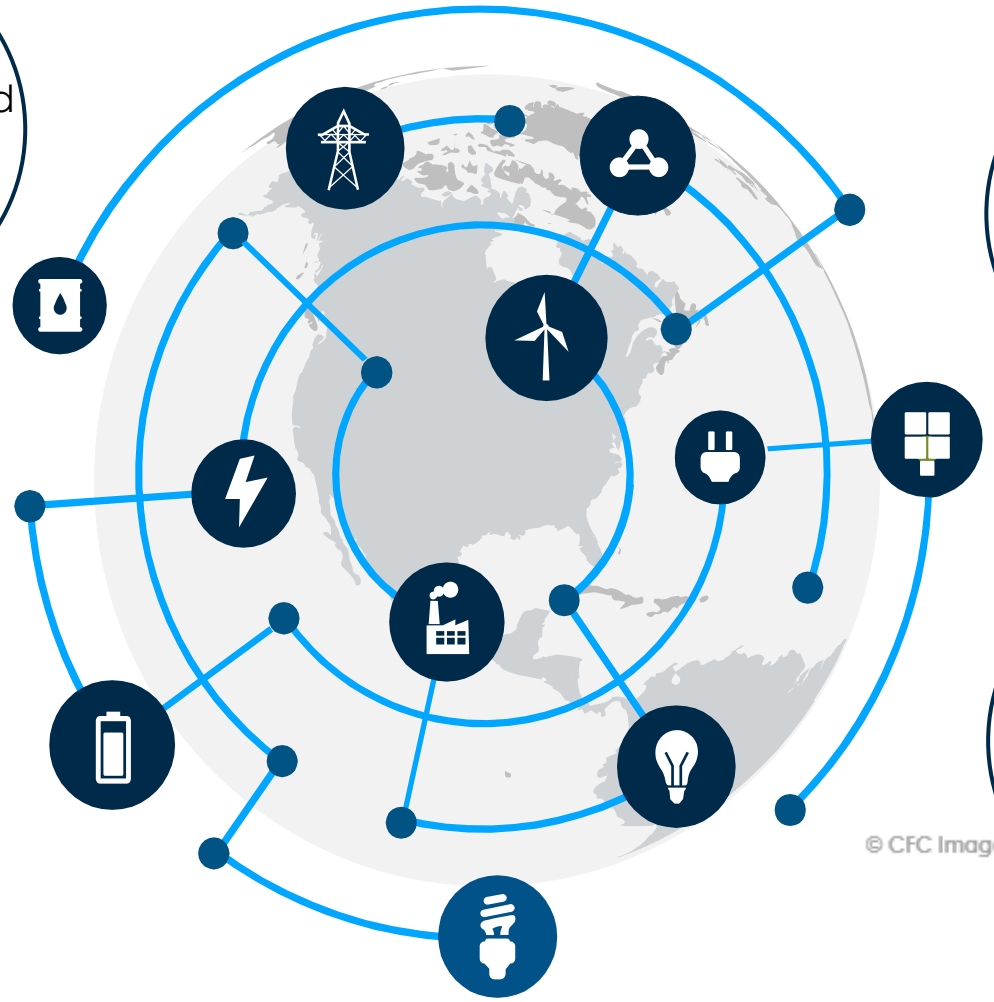
Maybe!

Transmission
Capacity/Demand

Generation
Energy

Maybe!

Generation
Capacity/Demand



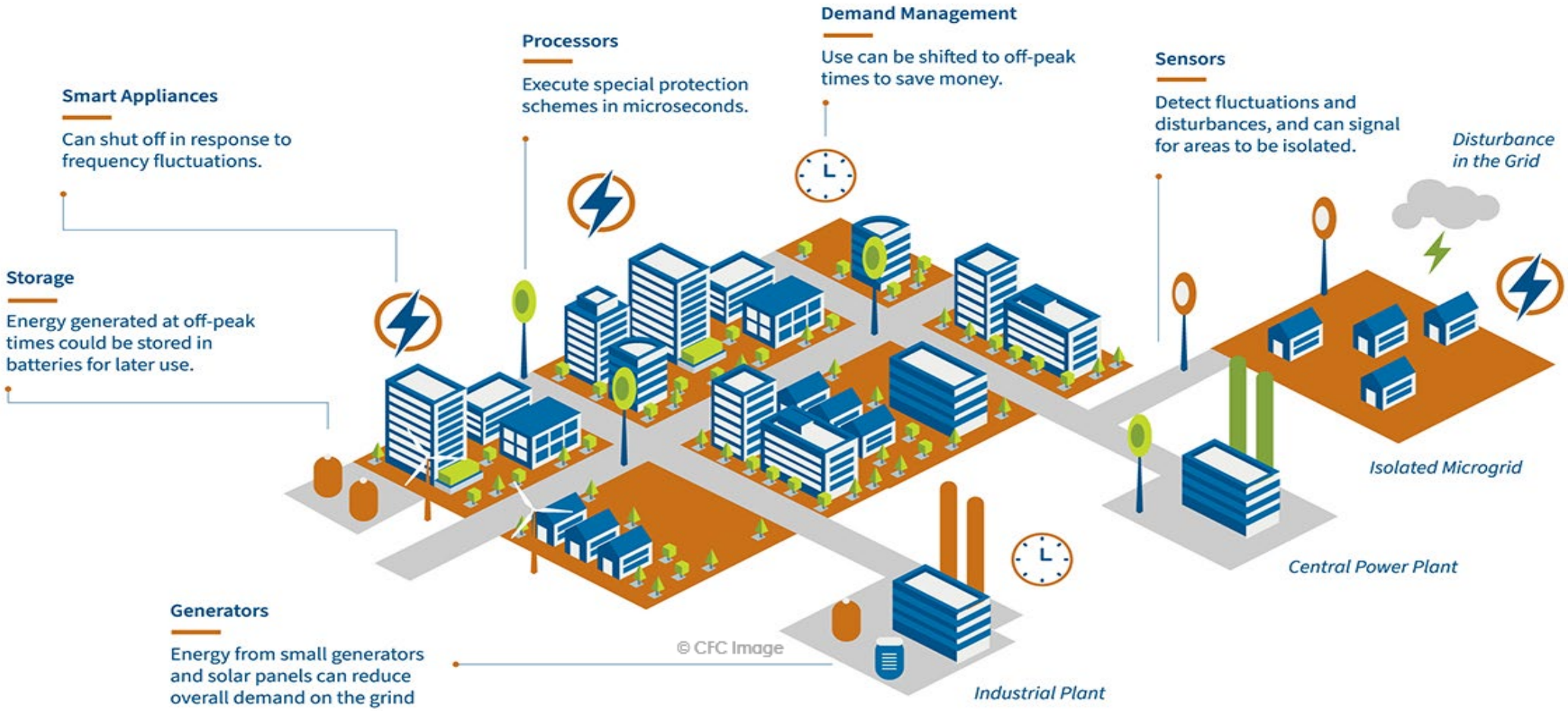
Distribution
Capacity/Demand

Maybe!

Distribution
Customer-Related

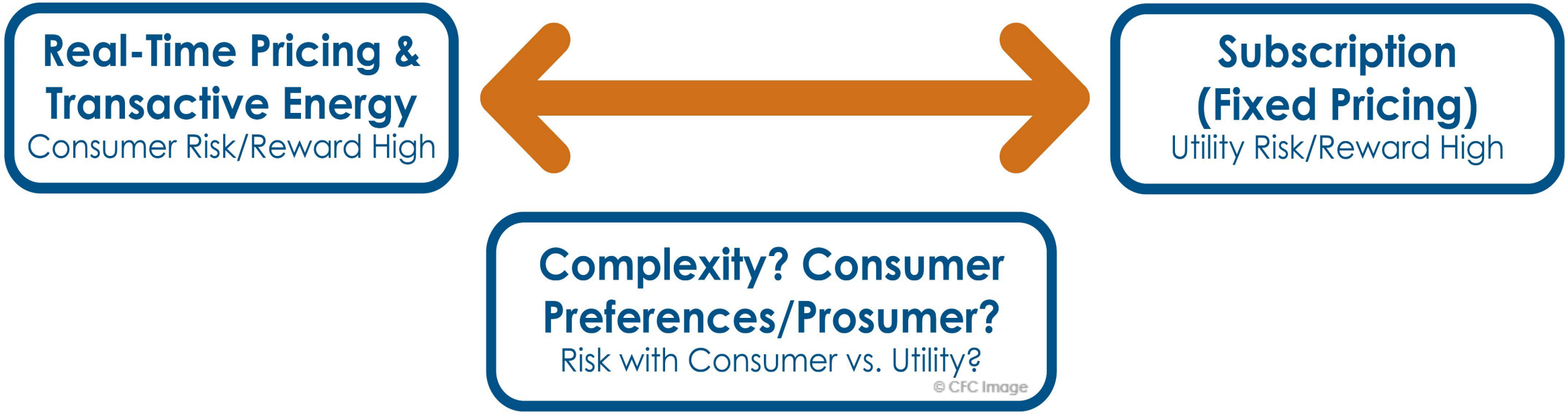
No!

Grid of the Future



Source: Adapted from U.S. Department of Energy (2015). *United States Electricity Industry Primer*

Rate Design of the Future



Lessons from Telecom

- Low Marginal Cost (Variable) & High (Fixed) Capital Costs
- Constraints Only During "Peak" Periods
- Peak Periods Difficult to Predict
  - Does Not Attempt to Pass on Time-Varying Costs to Consumers
- Solution (Useful Guide):
  - Range of Contract Structures Based On Reliability & Capacity Fit to Lifestyle
  - Raises Issues for Electric Services i.e., Medical need, Low income

Questions…

jason.strong@nrucfc.coop

Regulatory Advisory | Rate Design Consulting Service Requests
Email: UtilityRateDesign@nrucfc.coop

Presenter Information

Jason Strong
Vice President | Dulles, VA
jason.strong@nrucfc.coop
+1.703.467.3073

Jason Strong is the Vice President of Utility Pricing, Policy & Analytics at the National Rural Utilities Cooperative Finance Corporation (NRUCFC or CFC). Jason leads and directs a staff of electric utility consultants and analysts providing electric utility ratemaking, policy, economic and advisory consulting services, at the federal and state level, to member-electric cooperatives. Jason is responsible for leading the team in providing member-cooperatives with expertise in areas surrounding the general regulatory and rate-making process, and specific to certain technical requirements including regulatory accounting, rate of return and cost-of-capital, revenue requirement determinations, cost of service, wholesale and retail rate design, tariff and rate administration, and econometric modeling and advanced data analytics. In addition, he advises CFC and its members on nascent energy industry economic and legal trends. Since being employed by CFC, Jason has conducted or supervised hundreds of regulatory engagements for electric cooperative members. Jason has been instrumental in rate design efforts and has worked with member-cooperatives in emerging areas in designing residential demand charges, electric vehicle charging, and energy and demand time-of-use rates. Jason has represented member-cooperatives before the Regulatory Commission of Alaska, Louisiana Public Service Commission, New Mexico Public Regulation Commission, Vermont Public Utility Commission, and the Maine State Legislature.

Prior to joining CFC, Jason was an Economist in the Office of Energy Market Regulation at the Federal Energy Regulatory Commission (FERC). During his twelve-year tenure at the FERC, Jason led inter-disciplinary teams in efforts concerning Commission regulations and policies advising numerous Chairman, Commissioners and key decision makers in hundreds of proceedings involving cost-of-service and rate design, cost allocation methods, regional transmission organization energy and capacity auctions, transmission planning processes, and integration of diverse energy sources and emerging technologies into the marketplace. Jason was a subject matter expert for FERC litigators defending FERC orders on appeal before the U.S. Court of Appeals. Previous to FERC, Jason worked for Exelon Corporation in the Energy Acquisition Division.

Jason holds a Master of Science in Applied Economics with a Sequence in Electricity, Natural Gas and Telecommunications Economics and also a Bachelor of Science in Economics—both from Illinois State University.


CFC
Cooperative Finance