



September 18, 2018

# Flex Your Rate Muscles: Shape Your Load

APPA Business & Finance 2018 | Anaheim, CA



ECONOMICS

STRATEGY

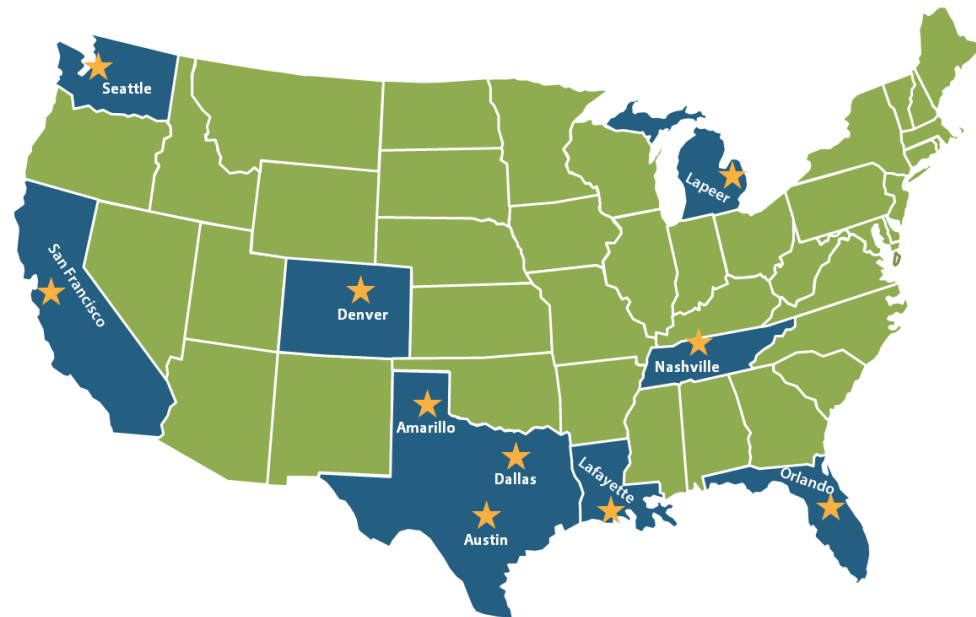
STAKEHOLDERS

SUSTAINABILITY

[www.newgenstrategies.net](http://www.newgenstrategies.net)

# NewGen Overview

- Created in 2012 by former R. W. Beck / SAIC / Leidos and J.Stowe & Co. owners and consultants
- Consulting firm specializing in serving the municipal utility industry
- Dedicated to our clients' missions and recognized experts in our respective fields of service
- National presence
- Significant growth since our inception in 2012, driven by our market leading expertise in helping public power
- Employ 40 expert and support staff with 10 offices across the country
- 290+ clients across the Energy and Environmental Practices



*Thoughtful Decision Making for Uncertain Times*

# NewGen Core Competencies

- Cost of Service
- Rate Design
- Financial Modeling & Planning
- Litigation & Regulatory Support
- Valuation & Appraisals
- Resource Planning



## Economics

- Stakeholder Engagement
- Education & Training
- Facilitation
- Council / Board Meeting Support
- Customer Surveys



## Stakeholders



## Strategy

- Distributed Resources
- Community Solar
- Joint Action
- Procurement
- Strategic Planning
- Contract Negotiations
- Rate Strategy



## Sustainability

- Carbon Neutrality
- Sustainability Reporting
- Sustainability Strategy
- Renewables
- Waste Resources





# Riverside Case Study

# Solar Rate Design Impact on Adoption and Load Shapes

- In RPU project, we modeled implementing a Residential TOU rate for solar customers
- Current rate:
  - Customer Charge
  - Tiered (Amperage) Reliability Charge
  - Tiered (Energy) Network Access Charge
  - Seasonal, Tiered Energy Rates
- DOM TOU rate included existing design plus:
  - Replaced Season, Tiered Energy Rates with
  - Seasonal, Tiered, Time-of-Use Energy Charges
    - On-, Off-, Mid-Peak

# Modeled Domestic TOU Rate for Solar Customers After 2018

Schedule D-TOU - Domestic Time-Of-Use Service

Rate Class / Component	Proposed <sup>(1)</sup>				
	FY2019	FY2020	FY2021	FY2022	FY2023
Customer Charge (\$/Month)	\$8.86	\$9.66	\$10.46	\$11.26	\$12.06
Network Access Charge (\$/month) <sup>(2)</sup>					
Tier 1 (< or = 12 Daily Avg kWh Usage)	\$0.55	\$0.97	\$1.38	\$1.94	\$2.49
Tier 2 (>12 - 25 Daily Avg kWh Usage)	\$1.33	\$2.32	\$3.32	\$4.65	\$5.97
Tier 3 (>25 Daily Avg kWh Usage)	\$2.92	\$5.12	\$7.31	\$10.24	\$13.16
Energy Charge (\$/kWh) <sup>(3)</sup>					
Summer- On Peak					
Tier 1 (0-330 kWh)	\$0.1766	\$0.1786	\$0.1810	\$0.1834	\$0.1860
Tier 2 (>330 kWh)	\$0.2826	\$0.2858	\$0.2896	\$0.2934	\$0.2976
Summer- Mid Peak					
Tier 1 (0-550 kWh)	\$0.1148	\$0.1161	\$0.1177	\$0.1192	\$0.1209
Tier 2 (> 550 kWh)	\$0.1837	\$0.1858	\$0.1883	\$0.1907	\$0.1934
Summer - Off Peak					
Tier 1 (0-220 kWh)	\$0.0883	\$0.0893	\$0.0905	\$0.0917	\$0.0930
Tier 2 (>220 kWh)	\$0.1413	\$0.1429	\$0.1448	\$0.1467	\$0.1488
Winter - On Peak					
Tier 1 (0-135 kWh)	\$0.1325	\$0.1340	\$0.1358	\$0.1376	\$0.1395
Tier 2 (>135 kWh)	\$0.2120	\$0.2144	\$0.2173	\$0.2202	\$0.2232
Winter - Mid Peak					
Tier 1 (0-250 kWh)	\$0.1060	\$0.1072	\$0.1086	\$0.1100	\$0.1116
Tier 2 (>250 kWh)	\$0.1696	\$0.1715	\$0.1738	\$0.1760	\$0.1786
Winter - Off Peak					
Tier 1 (0-115 kWh)	\$0.0883	\$0.0893	\$0.0905	\$0.0917	\$0.0930
Tier 2 (>115 kWh)	\$0.1413	\$0.1429	\$0.1448	\$0.1467	\$0.1488
Reliability Charge (\$/month) <sup>(4)</sup>					
Small Residence	\$10.00	\$10.00	\$10.00	\$10.00	\$10.00
Medium Residence	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00
Large Residence	\$40.00	\$40.00	\$40.00	\$40.00	\$40.00
Very Large Residence	\$60.00	\$60.00	\$60.00	\$60.00	\$60.00

(1) Rate changes are effective January 1, 2019 and January 1st of each subsequent year.

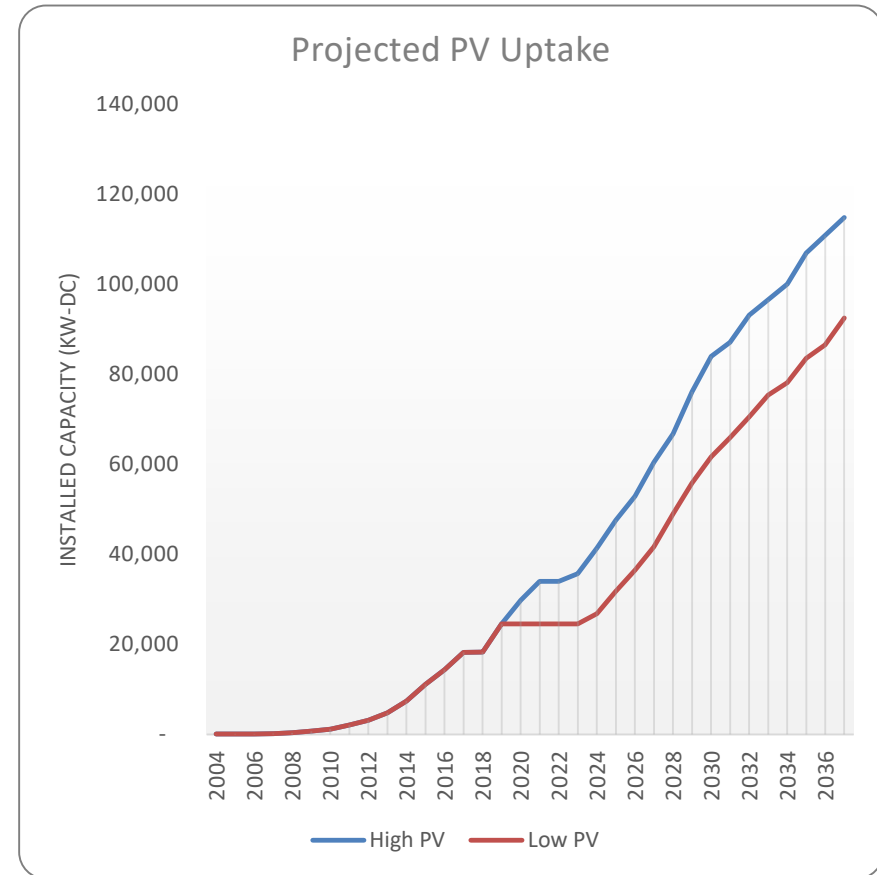
(2) Daily average kWh usage is determined by dividing the energy usage (kWh) in the billing period by the days of service in the billing period.

(3) Proposed four month summer season of June 1 to September 30. On-peak hours are 2:00 PM to 7:00 PM during summer months and 4:00 PM to 9:00 PM during winter months. Mid-peak hours are 6:00 AM to 2:00 PM and 7:00 PM to 11:00 PM during summer months, and 6:00 AM to 4:00 PM and 9:00 PM to 11:00 PM during winter months. Off-peak hours are 11:00 PM to 6:00 AM throughout the year.

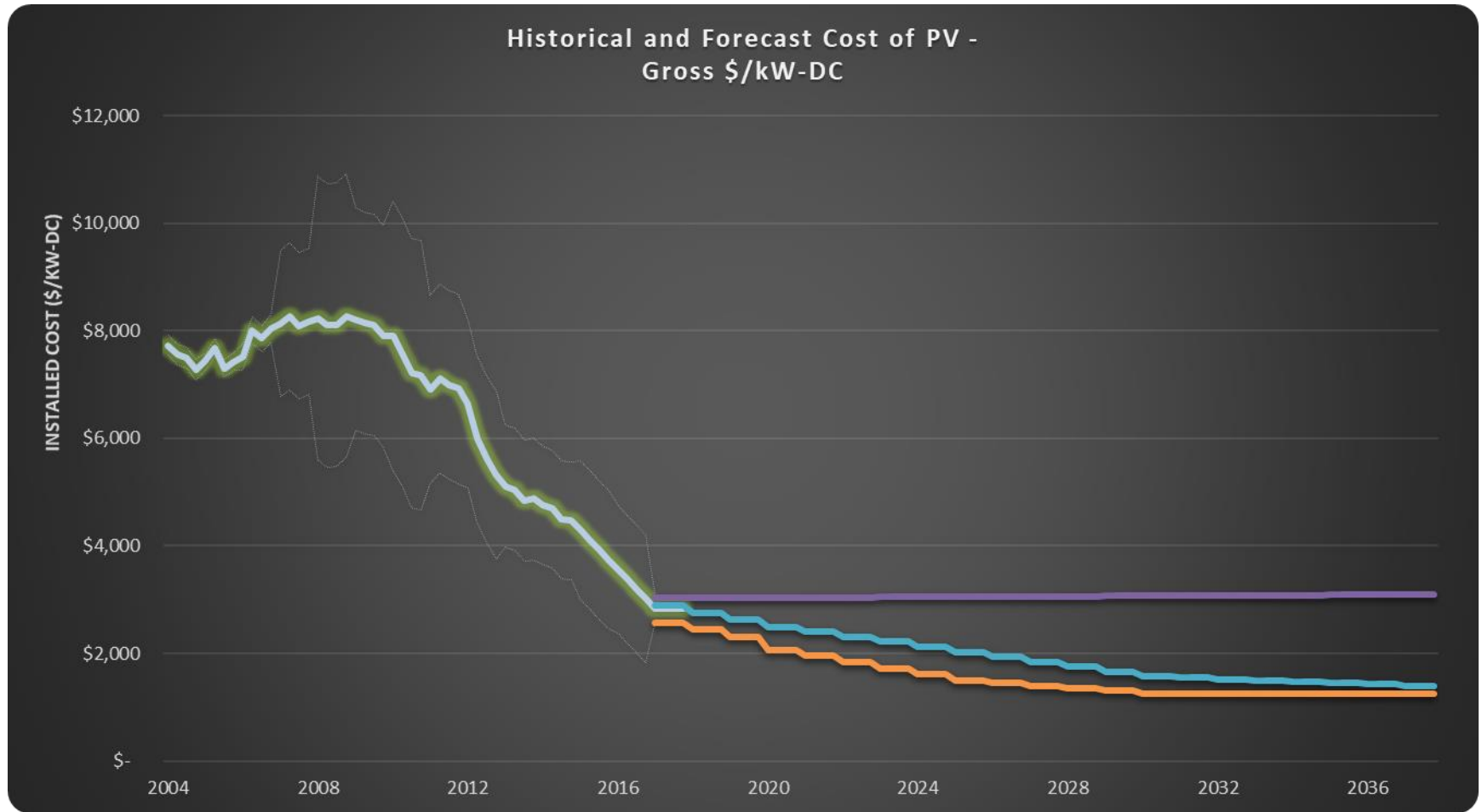
(4) No change to the Reliability Charge is proposed for this class.

# Impact of Domestic TOU Solar Rate Design on PV Uptake

- Domestic-TOU retained retail rate compensation for excess generation, but reduced credit value compared to current
  - Tier 1 Mid-Peak
- New tariff did not impact uptake as substantially as we thought



# Key Driver of Future PV Uptake



Declining installed cost of solar is still economically viable with decreased average bill credit stemming from Domestic TOU rate plan



# Future Adoption May Become Constrained by Non-Economic Factors

- Our study controlled for the geographic PV resource viability, but we lacked data on:
  - Historic districts, HOAs, other impediments to adoption
  - Building stock that may be more or less likely to support the infrastructure
  - Socioeconomic trends in ability to purchase
  - Circuit limits on minimum load at maximum levels of PV adoption
- Takeaway: Adoption will likely continue and rates must be designed to fully recover fixed costs and guard against revenue risk



“Rates as a Resource”

# Strategic Rate Design – Multiple Motivations

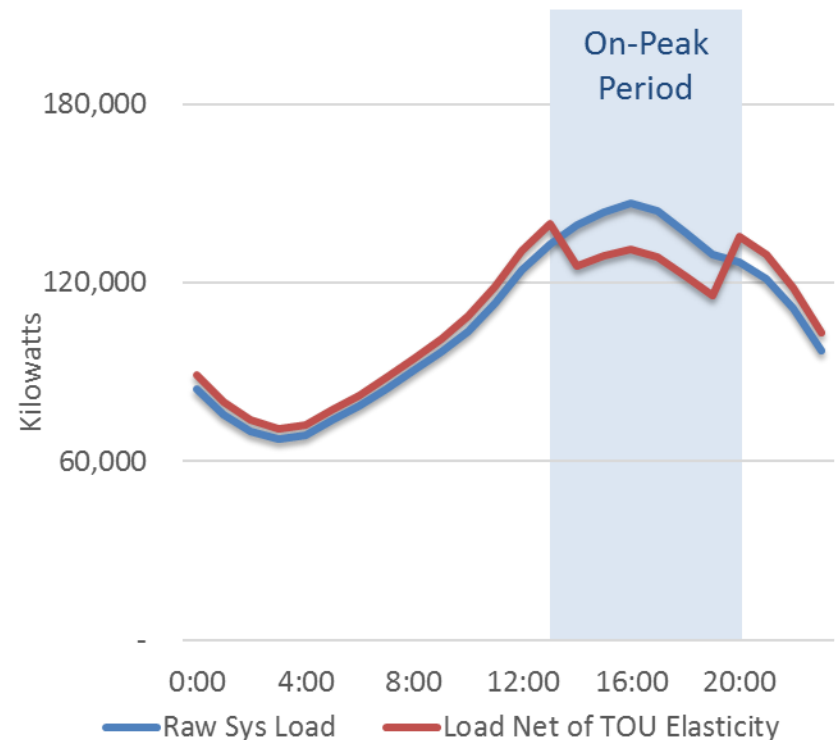
- Rate design has historically been an exercise in long division:

$$\frac{\textit{Cost}}{\textit{Billing Determinants}} = \textit{Rate Design}$$

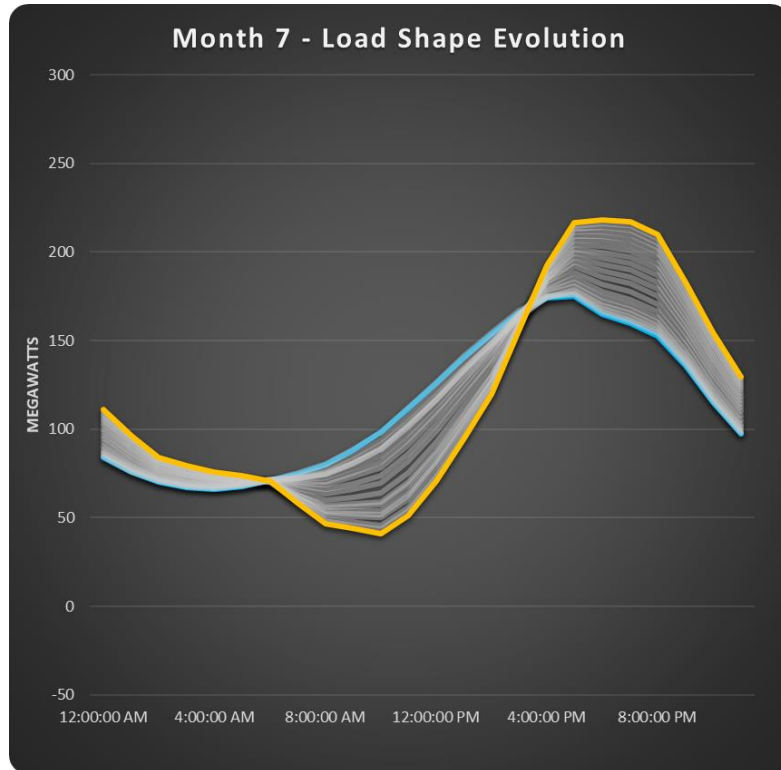
- With new technologies, customers respond to pricing signals, and load shapes evolve
  - Peak load, timing, and generation ramp requirements may drive new costs
  - Changes in load shapes change billing determinants

# “Rates as a Resource”: Load Shape Management via Rate Design

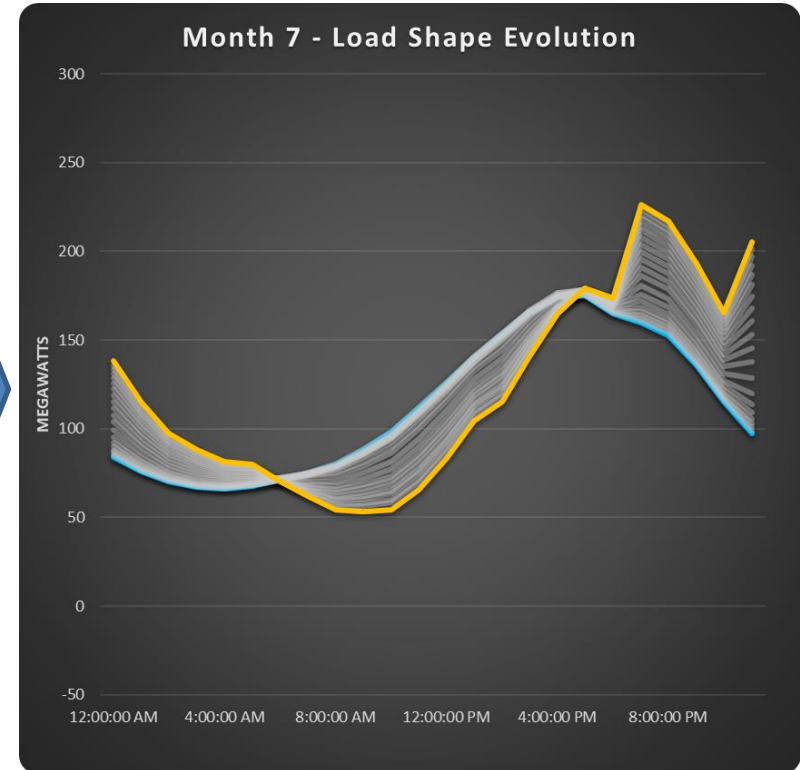
- Rate design can send price signals to influence consumption behavior and/or DER adoption that benefit the system
- However, rates must be designed:
  - Based on system cost characteristics
  - To send the right pricing signals to customers
  - While maintaining the viability of customer choice



# Rate Design Also Impacts Technology Adoption and Usage Patterns



High PV (NEM) / no EV-TOU



Lower PV (NEM 2.0) / EV-TOU

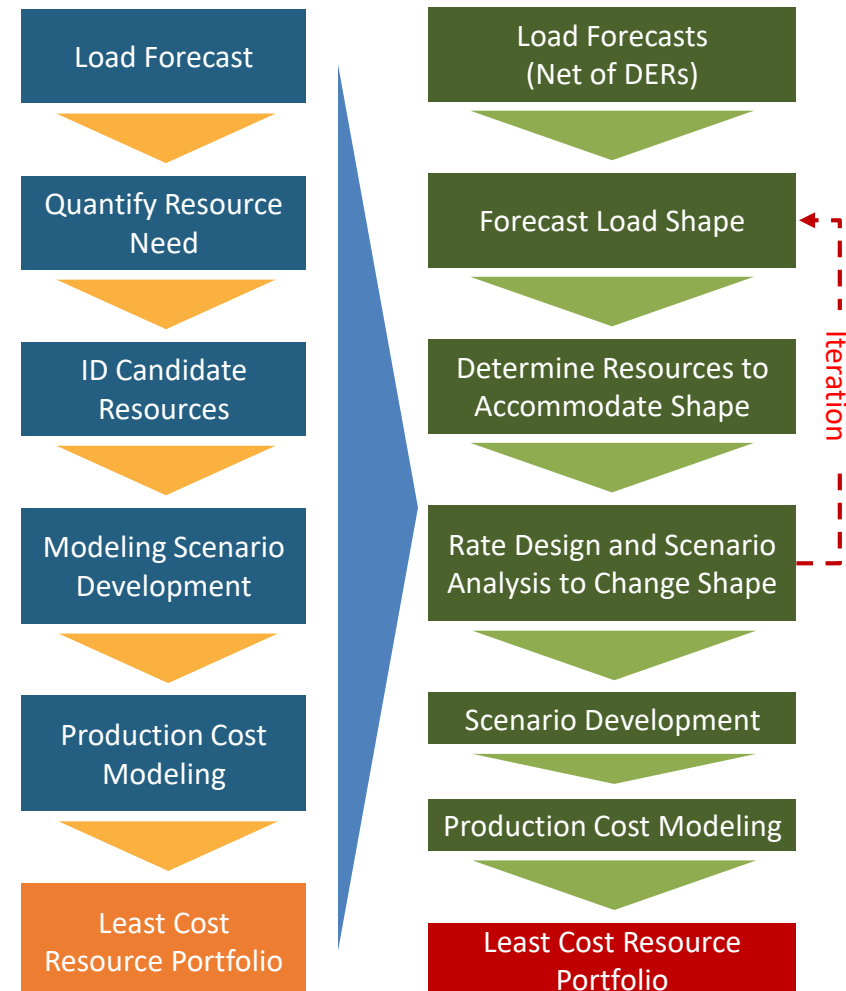
Rates impact customer behavior, but also technology adoption, all of which impact load shapes that should be considered in cost recovery AND resource planning



# Why Does This Matter for Load Forecasting and Resource Planning?

- Standard approaches to resource planning contain a “load shape blind spot”
- Resource selection process may not adequately identify the type and amount of capacity resources
  - Usually only considers generation resources and not demand side management or other measures to manage load
- Modeling Scenarios and Analysis
  - Resource scenarios are not usually informed by measures that utilities can take to influence peak demand, such as rate design

## Traditional Vs. Alternative Resource Planning Structure



# Key Takeaways

- Utilities should consider approaches that accomplish the following:
  - Forecast load and load shapes incorporating DERs
  - Forecast ramping requirements to meet peak demand
  - Consider rate design as a way to incentivize energy usage that helps manage resource requirements and improves system load factor
  - Rate design assessment – which is inherently necessary for load shape forecasting – is usually an afterthought in resource planning
- More accurate load shape forecasts that are influenced by targeted rate design changes can likely improve estimates of production costs



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