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Future Focus Starts Today Retail Rate Considerations Business & Finance Track

Utility Financial Solutions, LLC



Future Retail Rates Starts Today

Future rates rely on:

- **Managing power supply costs**
- **Advanced metering**
- **Billing system integration**
- **Staff training and implementation**
- **Board & Council education**

Start today!

What you can do today

General Strategy

- **Increase fixed monthly customer charge**
- **Introduce or Update power cost adjustment**
- **Introduce or increase kW distribution demand charge for all customers**
- **Introduce or advance your TOU kWh rates**
- **Consider additional kW demand for CP impacts**

What you can do today

Monthly customer charge

- **Recover minimal portion of distribution system**
- **Meter cost**
- **Meter reading, O&M**
- **Billing**
- **Customer Service**

What you can do today

Implement or update your power cost adjustment mechanism (PCA, PPA, ECA)

- **This additional kWh charge is intended to collect the change in power supply vs. what is already being collected in the customer's base energy (or demand) rate**
- **Helps smooth power supply cost volatility**

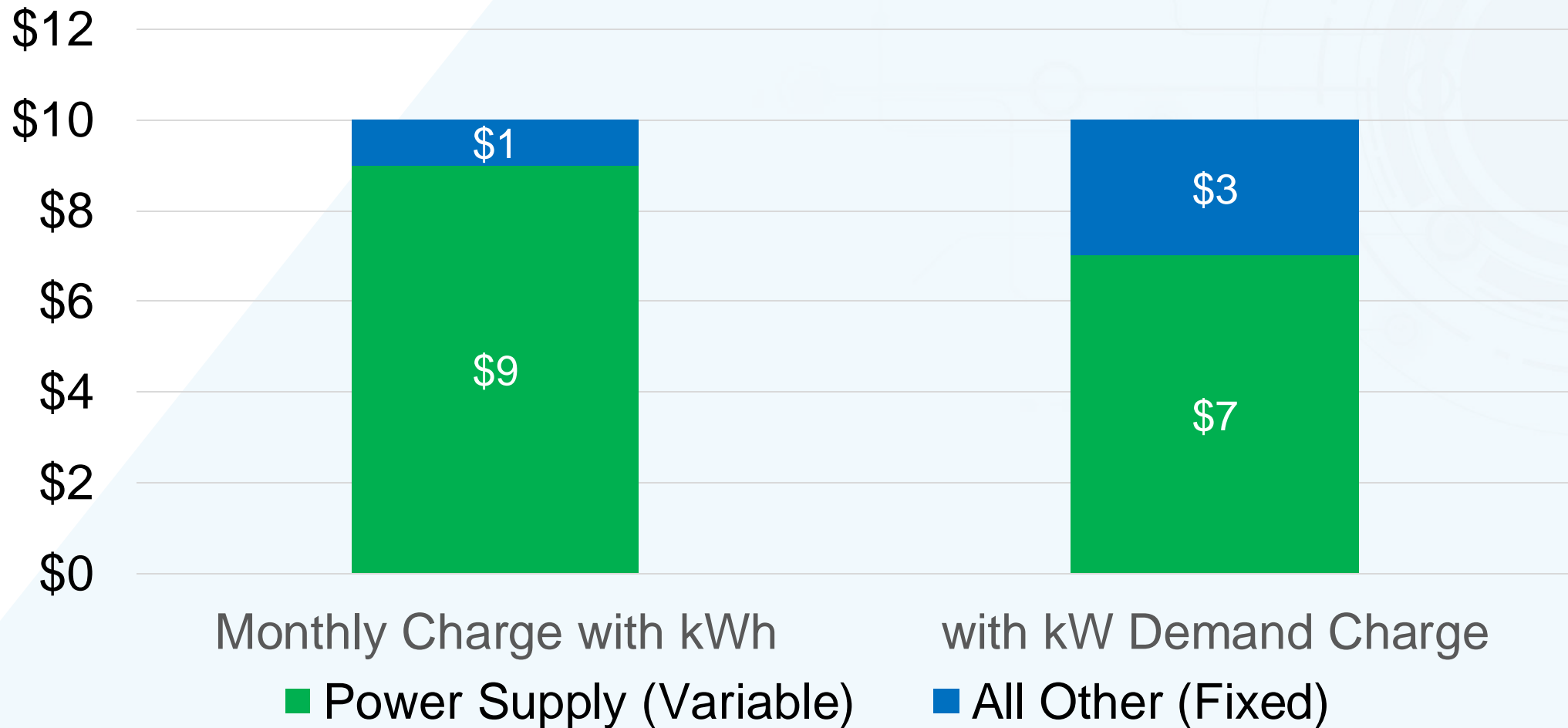
What you can do today

kW distribution demand charge for all customers

- **Move away from variable kWh energy revenue to recover distribution (fixed) costs with a kW charge**
- **Recover the costs needed to grow and maintain the capacity of your electric distribution system**
- **Ensure equity across customers within each rate class (fair to customers with same rate)**

What you can do today – Why kW distribution demand charge?

Expenses \$ Millions, \$7 Power, \$3 Fixed



What you can do today

TOU kWh Rates

- **More indicative of how utility power supply costs are incurred**
- **Sends pricing signals for EV and DG customers**
- **Is fair for all customers**
- **Can be implemented on a revenue neutral basis for the average customer to minimize impacts**

What you can do today

Coincident Peak Power Supply (CP)

- **Based on demand or peak load contribution at the time of a system peak**
 - **CP Capacity**
 - **CP Transmission**
- **Can be recovered through retail TOU (usually Critical Peak kWh)**
- **Alternatively recovered through retail kW CP demand charge or On Peak kW or Critical Peak kW**

What you can do today

Advanced metering

- **Ensure all meters can track maximum kW demand for all rate classes (even residential)**
- **Track time-of-use (TOU) kWh usage by meter**
 - At least two seasons - Summer, Winter (may start with single – Annual)
 - At least three TOU periods – On Peak, Off Peak and Critical Peak (may start with On Peak, Off Peak)

What you can do today

Advanced metering

- **Even if you are not ready to change retail rates, start collecting data**
 - Monthly peak kW Demand by meter
 - TOU kWh units by meter

Just because you have the data, doesn't mean you have to change your rates – start collecting the data and proof your metering and billing systems!

What you can do today

Billing integration

- **Get kW Demand and TOU kWh flowing through and printed on customer's bills**
 - Show on monthly bill with zero-dollar impact
 - This helps for preparing customers, staff and Board / Council
 - Data can be used to calculate rate impacts for rate evolution
 - Rate evolution generally takes 3 to 5 years once metering and billing systems capable

What you can do today

EV – Electric vehicle general impacts

- **Upgrades to transformers and general distribution system to support additional peak loads**
 - Generally supported with kW Demand charge
- **Power supply peak demand costs**
 - Generally supported with TOU kWh
- **Volatile power supply**
 - Generally supported with PCA

What you can do today

EV – Electric vehicle demand impacts vs. historic typical demands

Customer Category	kW Demand Range
Residential	1-10 kW
Small Commercial	10-30 kW
Large Commercial/Ind.	30+ kW
New Electrification Measures	
Level 2 EV Charger	6 to 20 kW
DC FC EV Charger	60-350 kW

What you can do today - Increased kW Demand Requires Increased Distribution System Capacity

- **Substation upgrades**
- **Circuits and transformers**
- **Primary conductor wire – provides distribution throughout town**
- **Secondary conductor – distributes electricity from a transformer to a customer's home**
- **Supply Chain Problems Exist Today - Transformers (“cans on poles”) Lead times is now a major problem. 4-6 weeks lead times are now 1-2 years.**
- **Major suppliers are not accepting quotes in 2023, building for 2024 delivery**



What you can do today – EV Stations

- **Residential**

- Typical night charging – encouraged by TOU kWh
- Typical level 1 or level 2 charging 1 kW to 20 kW – supported by kW demand charge

What you can do today – EV Stations

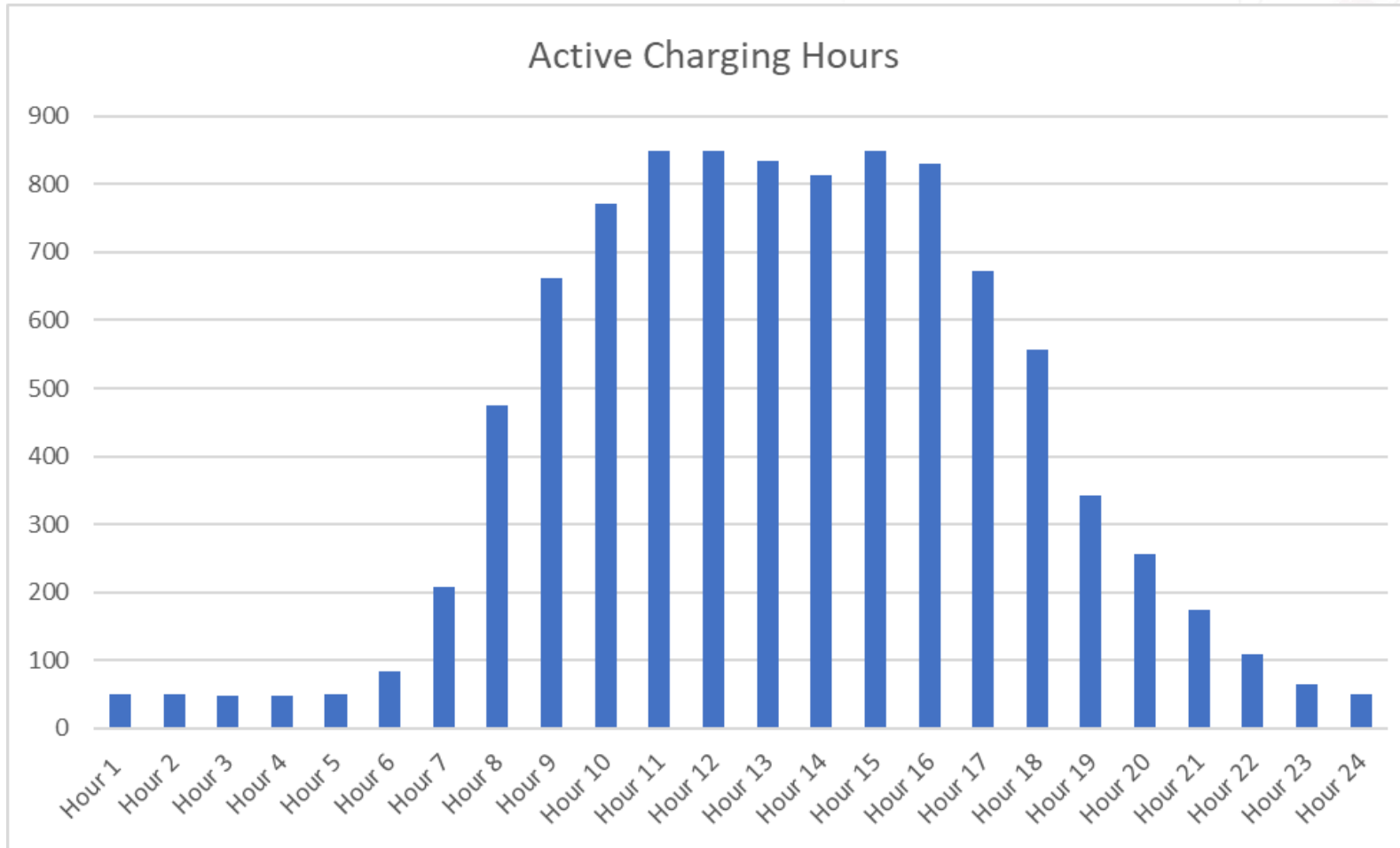
- **Commercial**

- Typical mid-day, holiday charging – encouraged by TOU kWh
- Typical level 2 6 kW to 20 kW or DC Fast Charging 60 kW to 350 kW supported by kW demand charge

What you can do today – EV Stations

- **City and Utility Owned**
 - Similar to Commercial Stations – 20 kW to 350 kW
 - Main difference is ownership of equipment behind retail meter – City or Utility own stations
 - Point of sale (POS) fees – usually 10% adder
 - Maintenance fees – to keep stations operational
 - Parking fees
 - Anytime parking to remit to City Parking Authority
 - Idle time parking to encourage turnover of space

What you can do today – Sample City and Utility Owned Level 2 Usage



What you can do today – EV Stations

- **Rule of thumb common “all in” - \$ per kWh**
 - Residential level 1 or level 2 \$.20 cents per kWh
 - Commercial level 2 \$.40 cents per kWh
 - Commercial or City and Utility Owned CD FC \$.60 cents per kWh
- Keep in mind behind meter cost recovery for City and Utility Owned stations
- Keep in mind changing power supply costs

What you can do today – Load Factor

Load Factor - Measurement of how efficiently customer is utilizing the system installed to support their peak demand. A distribution system is designed and maintained to support peak loads.

Load Factor = Energy usage (monthly kWh/hours in a month)

Highest momentary peak (15 minute) load (kW) in a month

- **Sample residential customer uses 800 kWh/mo, 4 kW peak demand**
- **Average month 30 days x 24 hours = 720 hours month**
- **Compare impacts of peak loads of 4 kW, then 10 kW**
- **LF = (800/720)/4**
= 28%
- **LF = (800/720)/10**
= 11%



What you can do today – City and Utility owned Public EV Chargers

ChargePoint Rate for Utility Owned 7.3 kW, level 2 electric vehicle charger		
Monthly kWh	LF	\$ per kWh
160	3%	\$ 1.00
533	10%	\$ 0.47
799	15%	\$ 0.40
1,066	20%	\$ 0.36
1,599	30%	\$ 0.32
2,132	40%	\$ 0.30
2,665	50%	\$ 0.29
3,197	60%	\$ 0.28
3,730	70%	\$ 0.28
4,263	80%	\$ 0.27
4,796	90%	\$ 0.27
5,329	100%	\$ 0.27
Target LF->	20%	\$ 0.36

EV Rate challenges “Chicken or the egg”

- Most current sites 3% Load Factor to a future hopeful target LF of > 20%
- Sample \$.036 per kwh @ 20% LF
- After X hours add parking
- Note: Current rates may not cover annual maintenance



What you can do today – Distributed Generation (DG)

DG general utility impacts

- Lower kWh sales
- Similar if not higher kW demand requirements
- **Get your metering and billing systems up to date**
- **Get you retail rates evolution going**
 - kW Demand Charges
 - TOU kWh Charges
 - PCA

What you can do today – Distributed Generation (DG)

Solar credit

- Usually based on variable energy or market-based energy

Solar with storage

- May have higher value based on higher market-based TOU energy value so some offer TOU Credit
- May have additional capacity and/or transmission value if storage can lower peak demand charges so some offer higher TOU Credit and/or On Peak Demand charge or CP Demand charge

What are costs and risks of evolving with industry

- **Advanced metering**
- **Upgrades to billing for additional integration**
- **Rate evolution planning and financial studies**
- **Staff education and time**
- **Board and Council education and approval**
- **Customer outreach**
- **Risk resistance to change**

What are costs and risks of resisting change

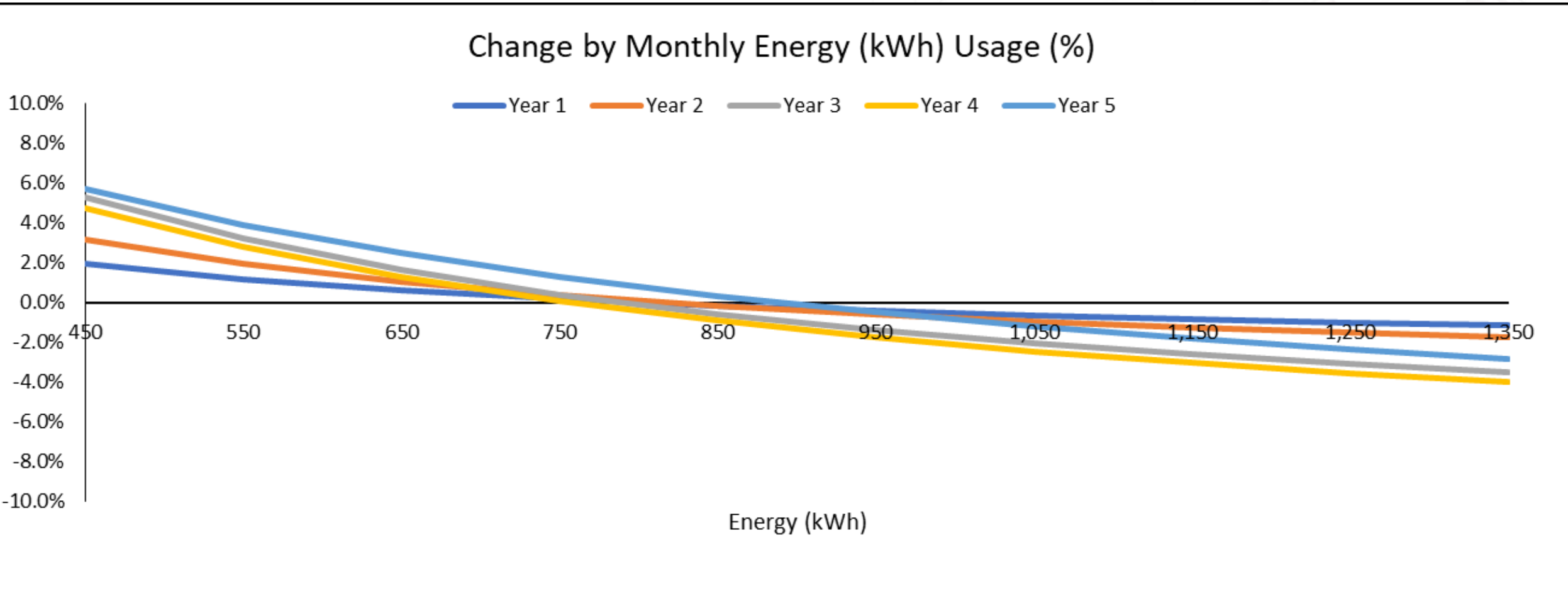
- **Risk alienating savvy Board, Council and customers who may want change**
- **Risk financial loss and/or customer cross subsidy**
- **Risk sending incorrect price signals that can make it challenging to adapt in the future**
- **Higher distribution costs that may not be properly recovered**
- **Higher power supply costs if retail rates don't align with how costs are incurred**

Sample Residential Retail Rate Evolution

Sample Rate Evolution						
Rate Design						
<i>Schedule Residential</i>		cents per kWh Energy Charge + Power Cost Adjustment Change from Current				
		\$ (0.4)	\$ (1.0)	\$ (2.1)	\$ (3.3)	\$ (4.4)
Energy Charge + Power Cost Adjustment	\$ 0.13248	\$ 0.12860	\$ 0.12250	\$ 0.11110	\$ 0.09920	\$ 0.08880
Rates	Test Year	Year 1	Year 2	Year 3	Year 4	Year 5
Monthly Facilities Charge:						
Monthly Charge	\$ 9.65	\$ 12.75	\$ 15.75	\$ 18.75	\$ 21.75	\$ 25.00
Energy Charge:						
All Energy	\$ 0.0975	\$ 0.1186				
TOU Energy Charge:						
kWh Off Peak (marginal energy power supply)			\$ 0.1020	\$ 0.0830	\$ 0.0630	\$ 0.0450
kWh On Peak (+ some CP Power Supply)			\$ 0.1190	\$ 0.1090	\$ 0.0990	\$ 0.0900
kWh Critical Peak (+ CP Power Supply)			\$ 0.1220	\$ 0.1260	\$ 0.1300	\$ 0.1350
Distribution Demand Charge						
All Demand	\$ -	\$ -	\$ 0.50	\$ 2.00	\$ 3.50	\$ 5.00
DG Credit						
All rkWh	\$ (0.0975)	\$ (0.1186)				
kWh Off Peak (marginal energy power supply)			\$ (0.1020)	\$ (0.0830)	\$ (0.0630)	\$ (0.0450)
kWh On Peak (+ some CP Power Supply)			\$ (0.1190)	\$ (0.1090)	\$ (0.0990)	\$ (0.0900)
kWh Critical Peak (+ CP Power Supply)			\$ (0.1220)	\$ (0.1260)	\$ (0.1300)	\$ (0.1350)
Power Cost Adjustment:						
All Energy	\$ 0.03500	\$ 0.01000	\$ 0.01000	\$ 0.01000	\$ 0.01000	\$ 0.01000
Revenue from Rate	\$ 16,076,787	\$ 16,085,575	\$ 16,117,695	\$ 16,121,324	\$ 16,079,428	\$ 16,229,511
Change from Previous		0.1%	0.2%	0.0%	-0.3%	0.9%



Sample Residential – Customer Impacts



Questions and Discussions

Thank you!

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