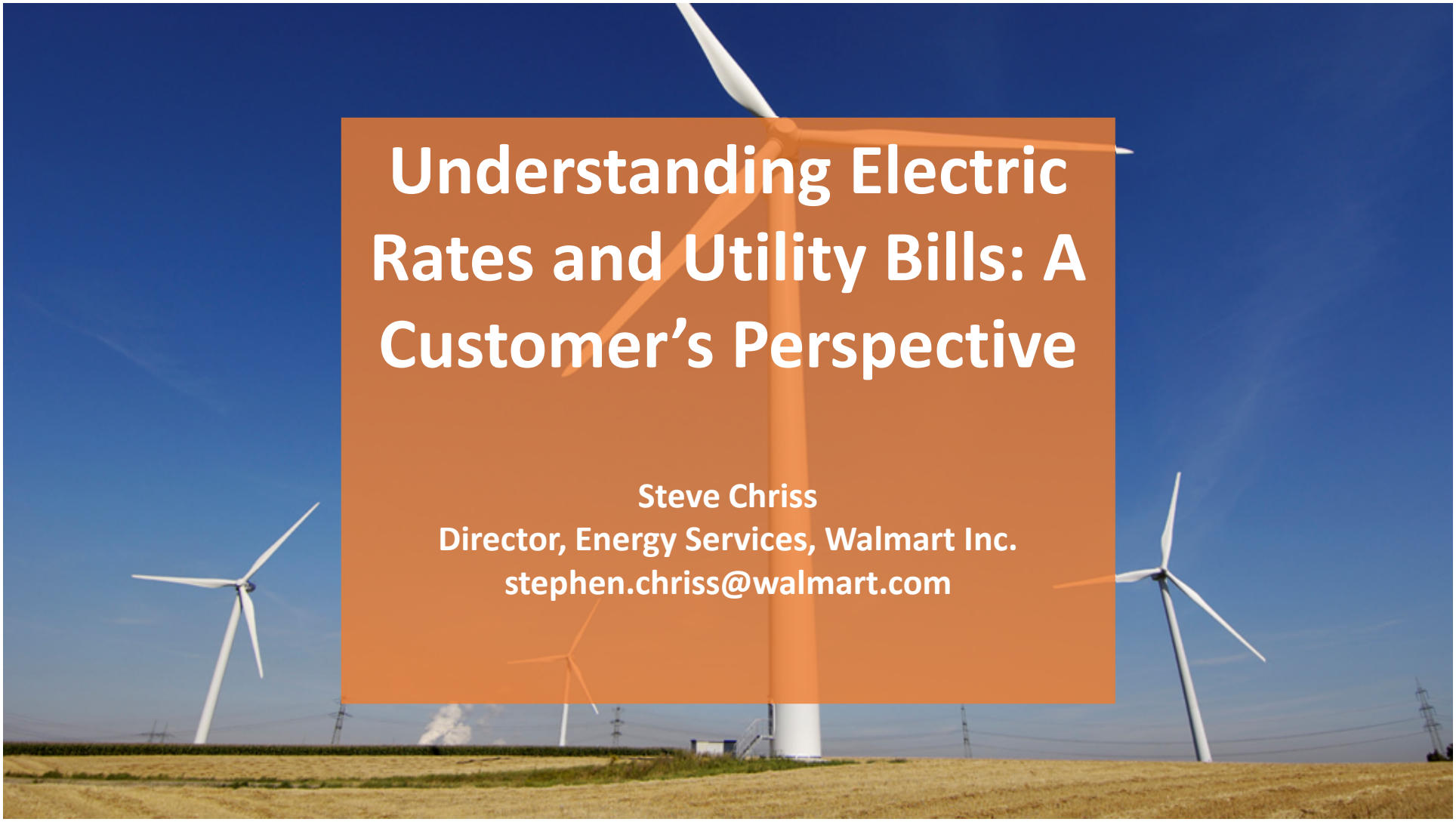

Understanding Electric Rates and Utility Bills: A Customer's Perspective

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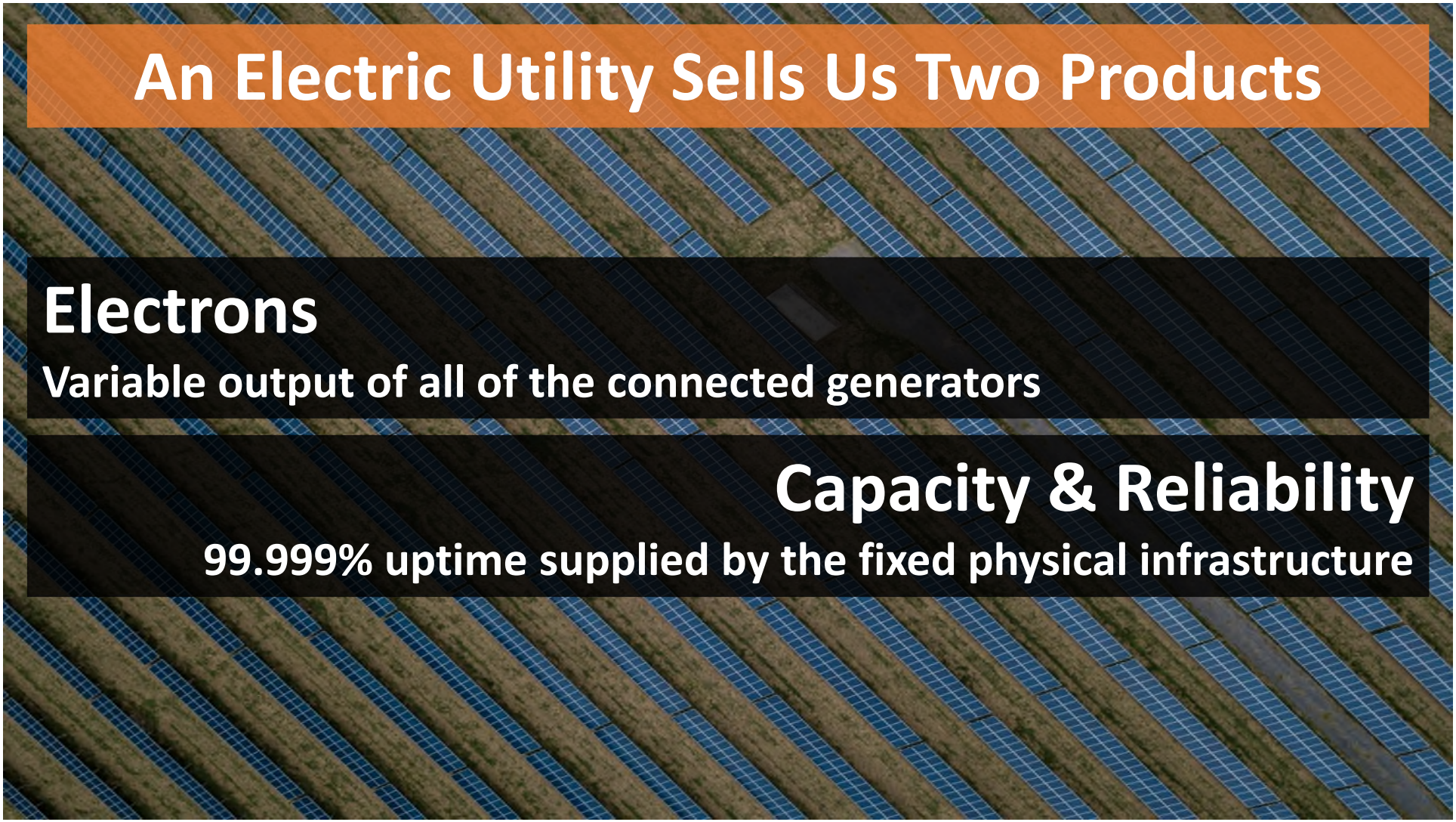
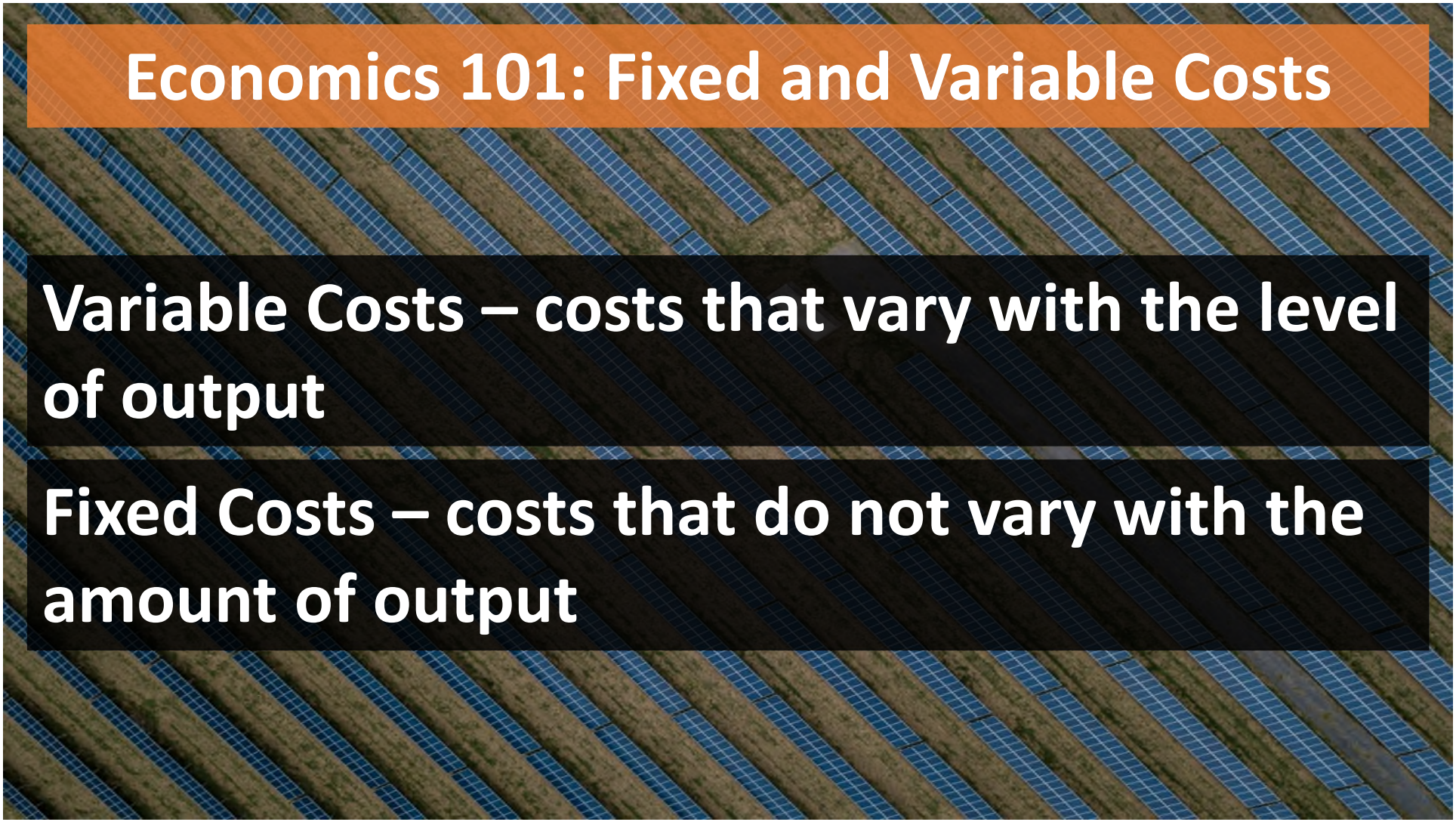

An Electric Utility Sells Us Two Products
Electrons
Variable output of all of the connected generators
Capacity & Reliability
99.999% uptime supplied by the fixed physical infrastructure


Economics 101: Fixed and Variable Costs
Variable Costs – costs that vary with the level of output
Fixed Costs – costs that do not vary with the amount of output

The Regulatory Paradigm

Utilities are unique vendors – they are granted a monopoly for their service territory and their prices and terms are set administratively and not through direct negotiation with customers

Regulators are the arbiter for rate change requests and are charged with balancing the needs of customers and utility shareholders while ensuring that the utility can provide safe and reliable service

- **Utilities are deemed to be natural monopolies, so the regulator is the proxy for the discipline that a competitive market would otherwise provide**

The Regulatory Paradigm

Utility rates are typically set in a process called a "rate case"

- **Rates set as part of a rate case are typically referred to as "base rates" and are charged through tariffs set out by customer class (e.g. residential, general service, commercial, industrial, lighting, etc.)**
- **Rate cases are open for customer participation and essentially represent the only opportunity to influence the prices and terms of utility service**

The Regulatory Paradigm

More recently, utilities have increased their requests to recover certain costs outside of the rate case process via rate riders

- **Traditionally, riders were used to recover costs for which the utility may not have direct control, like fuel and purchased power**

- **More recent uses:**
  - **As a risk mitigation tool for a wider array of costs to decrease "regulatory lag," which is the time elapsed between when a cost is incurred and when it is recovered through rates**

  - **To true up revenues and/or earnings to levels allowed by the regulator**

The Regulatory Paradigm

Changes in utility loads can drive rate changes as well:

- Even if a utility cost structure does not change, inability to recover enough revenue through rates or meet certain earnings levels can drive rate increases

- If actual load is different than forecast load, this can cause a utility to over-recover or under-recover costs

- Load changes can be caused by:
  - Economic downturns or booms (e.g. COVID-19 impacts)
  - Energy efficiency
  - On-site generation
  - Changes in customer behavior and technology adoption
  - Weather

What I'll Be Watching For

- For utilities with riders that recover variable costs (fuel is the big one), whether rates are reduced as lower loads cause costs incurred to be lower than forecast costs:
  - We've already seen significant fuel rate reductions or refunds for utilities that set fuel rates annually (e.g. Florida, Georgia) – for utilities that have not changed rates or issued refunds those differentials will show up in true-ups the next time rates are set
  - Utilities that set fuel rates quarterly (e.g. Colorado) or monthly (e.g. Louisiana) are more likely to match costs and revenues, so no expectation for rate changes not related to underlying commodity or production costs
- For utilities with riders that recover fixed costs, whether reduced loads trigger larger true-ups the next time rates are set

What I'll Be Watching For

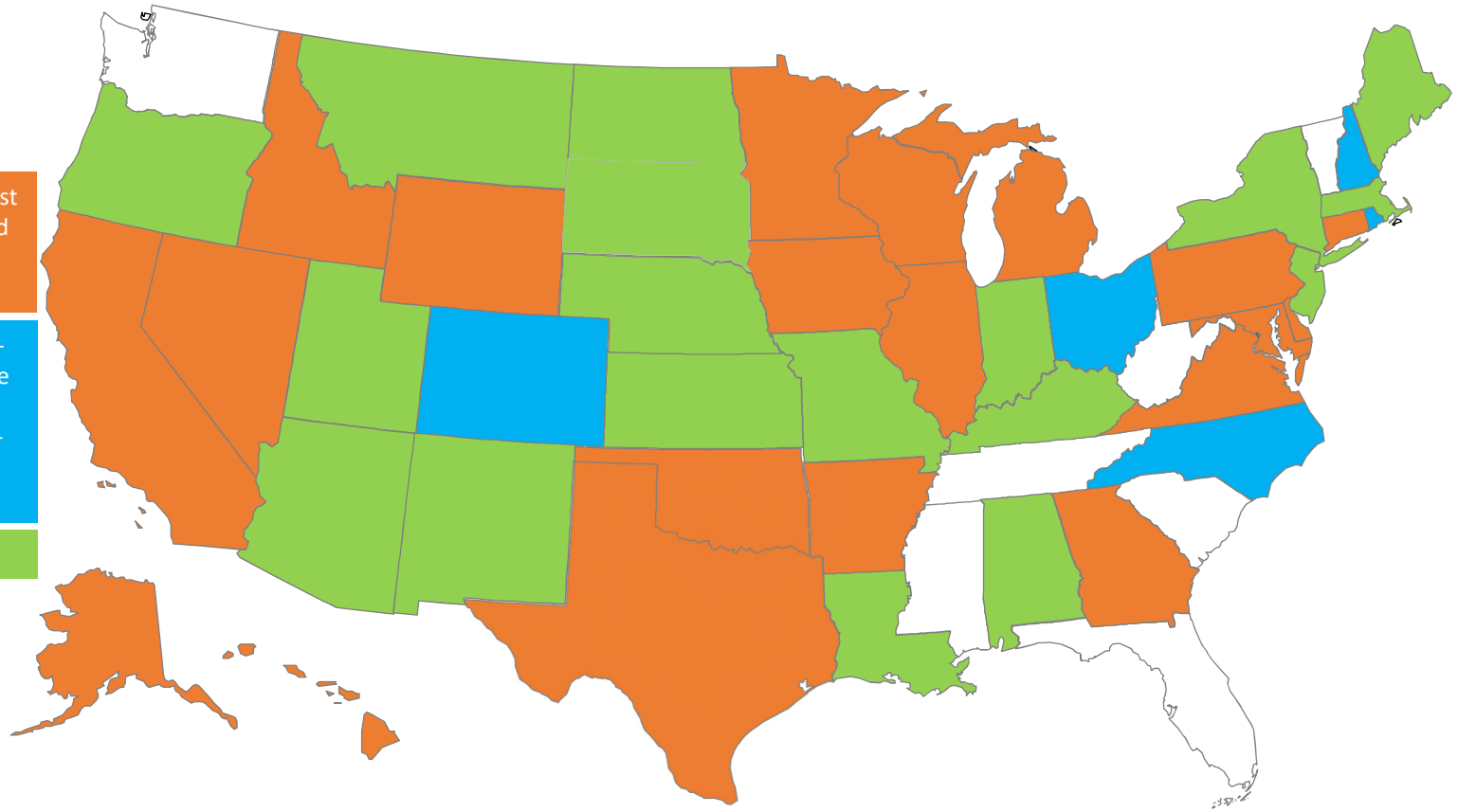
- How COVID-19 impacts rates
  - On the cost side:
    - Labor costs (overtime, shifting costs from capital to O&M)
    - Materials costs (PPE, cleaning supplies)
    - WFH IT costs
    - Employee sequestration costs
    - Uncollectable/bad debt expense
  - On the revenue side:
    - Reduced revenues from reduced customer load – lower contribution to fixed costs impacts earnings
    - Revenue impacts of suspended disconnects and fees
  - Rate cases vs. other mechanisms?
    - Regulators will need to determine whether impacts are isolated and short-term or have longer-term systemic impacts
    - Weigh against mechanisms already in place for some utilities that adjust for significant changes to the business (e.g. decoupling, formula rate plans)

How States Have Decided To Date

Deferral – costs and/or lost revenues may be deferred for future recovery

Customer Payment Plan – customers are responsible for any arrearages, to be recovered on a customer-specific basis

Pending



Ratemaking 101

Four primary buckets of utility costs that drive rate changes:

Generation:

New power plants, federal and state compliance, early coal plant retirement, changes in fuel and purchased power costs

Distribution:

"Grid modernization" – infrastructure replacements and upgrades, new technologies to manage system and incorporate distributed energy resources

Transmission:

New transmission lines, infrastructure to support large scale renewables

Customer:

Smart meters, upgrades to billing and management systems

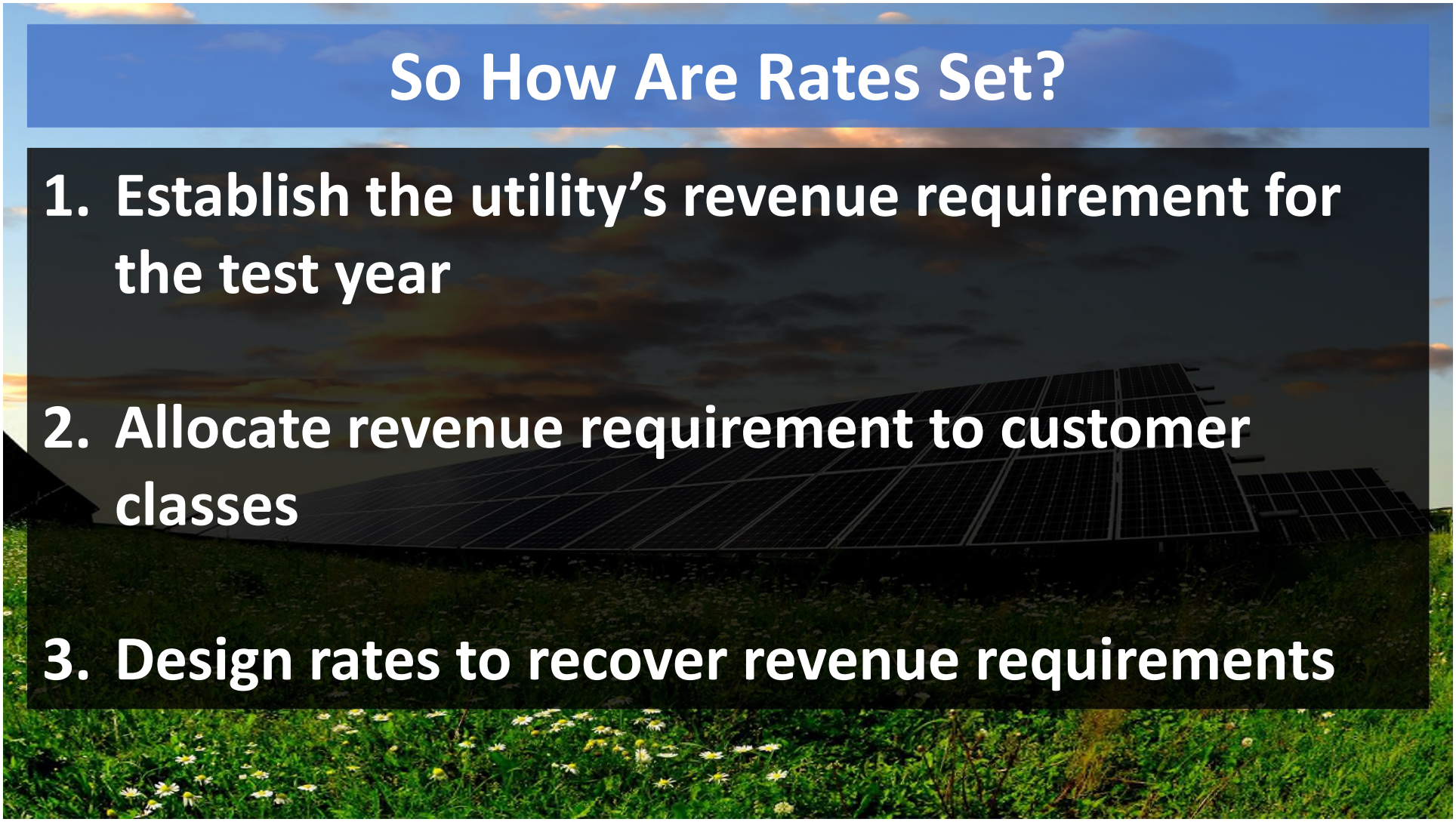
Ratemaking 101

"Regulated" vs. "Deregulated": All states are regulated, it's just a matter of which services:

In regulated states, price and term is set by the state or federal utility regulator for all components of utility service

In deregulated states, prices for generation service are based on market prices and not set by a regulator

* Rates for remaining services are still regulated *

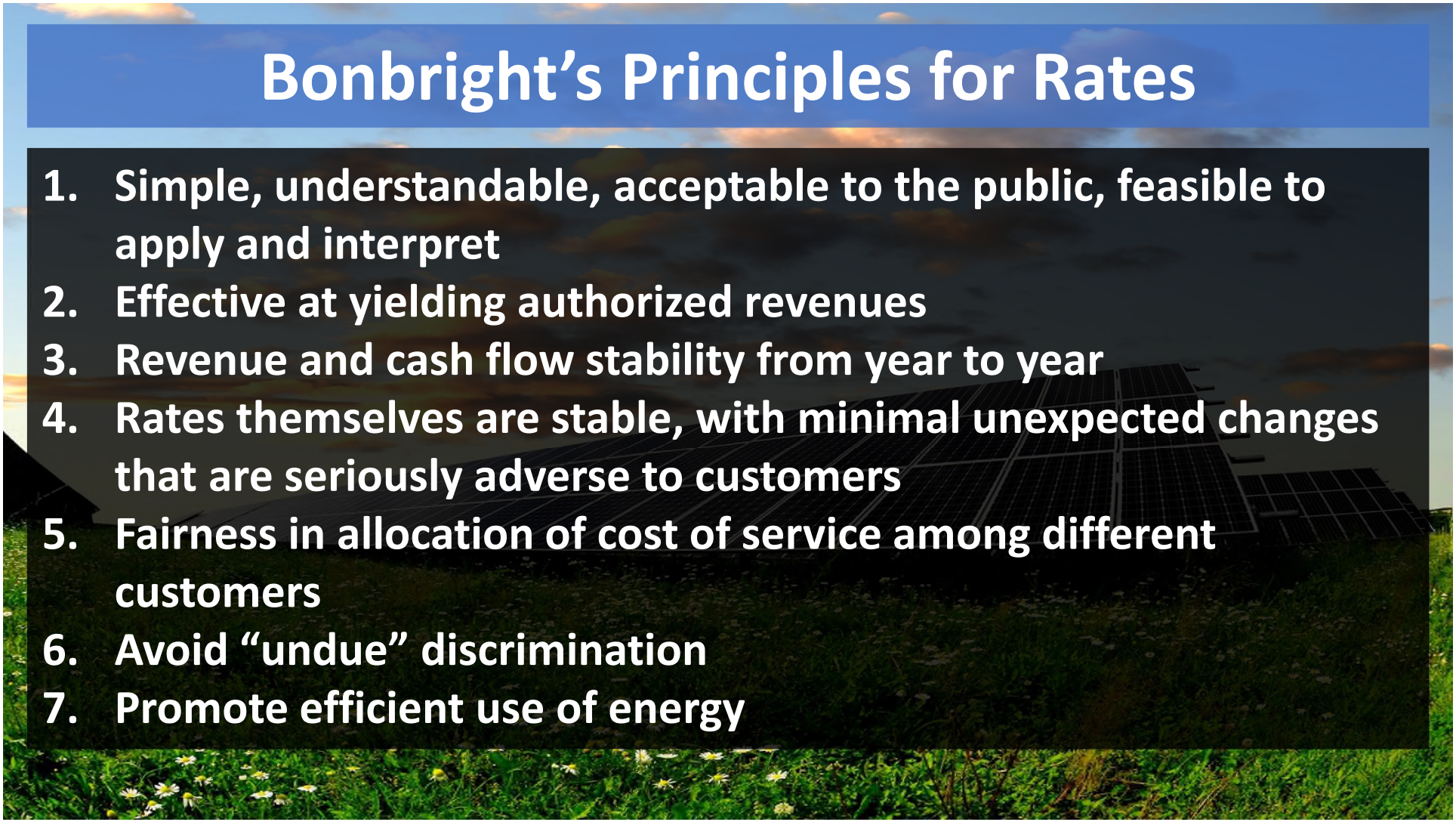


So How Are Rates Set?

1. Establish the utility's revenue requirement for the test year

2. Allocate revenue requirement to customer classes

3. Design rates to recover revenue requirements



Bonbright's Principles for Rates

1. Simple, understandable, acceptable to the public, feasible to apply and interpret
2. Effective at yielding authorized revenues
3. Revenue and cash flow stability from year to year
4. Rates themselves are stable, with minimal unexpected changes that are seriously adverse to customers
5. Fairness in allocation of cost of service among different customers
6. Avoid "undue" discrimination
7. Promote efficient use of energy

Revenue Requirement

Revenue Requirement – the amount of annual revenues required by a utility to cover its expenses and have the opportunity to earn a fair rate of return

We'll call this "THE PIE"

Revenue Requirement

What customers think a utility wants:

Revenue Requirement

What customers want:

Revenue Requirement

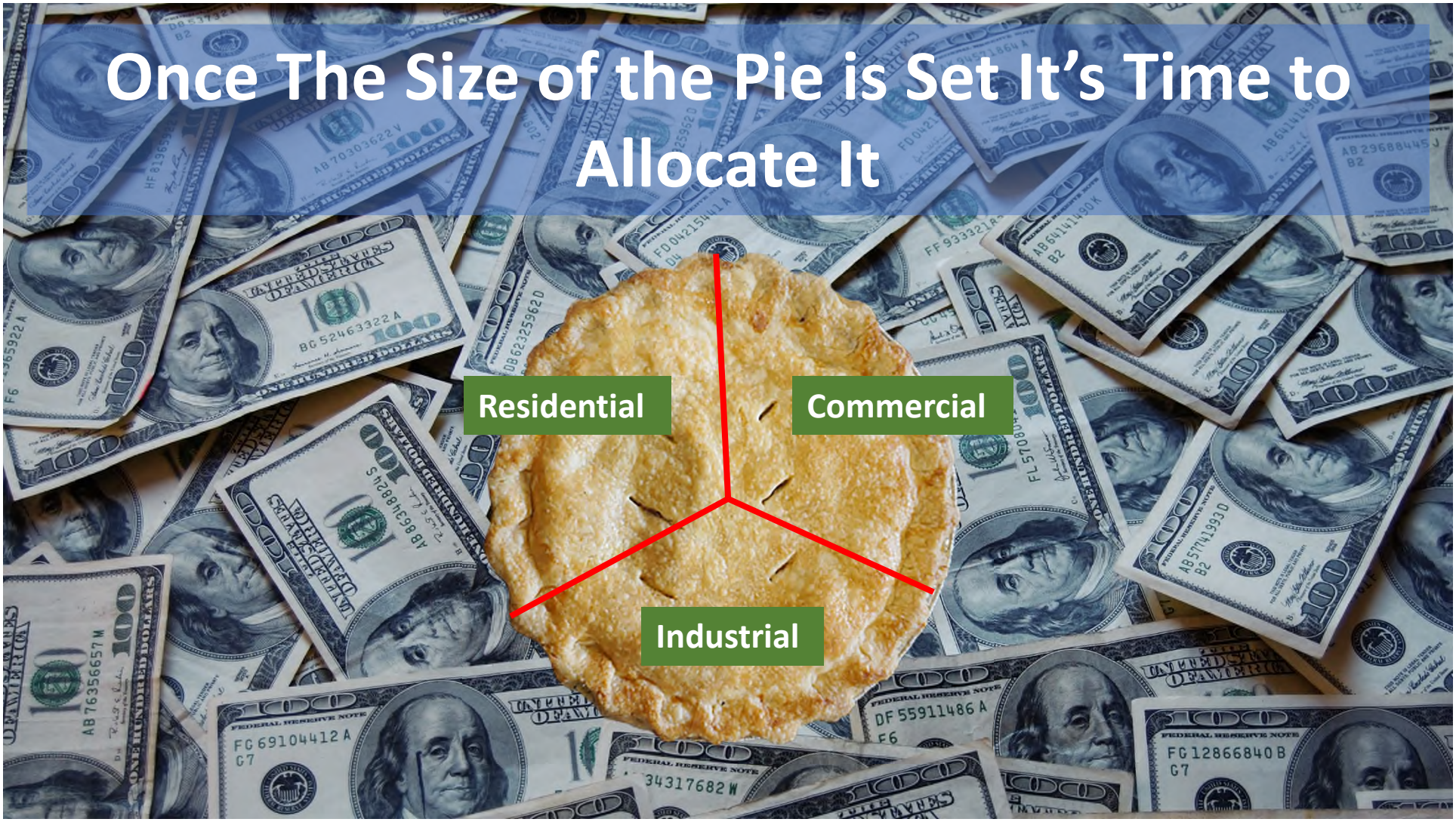
The Revenue Requirement Formula

$$= O + T + d + r(RB)$$

Where:
O = operating expenses
T = taxes (corporate income taxes + other taxes)
d = annual depreciation expense
r = overall rate of return (weighted average cost of capital)
RB = rate base (gross investment – accumulated depreciation)

The utility only earns a return on rate base – major expenditures like fuel are operating expenses and not eligible to earn a return

Once The Size of the Pie is Set It's Time to Allocate It



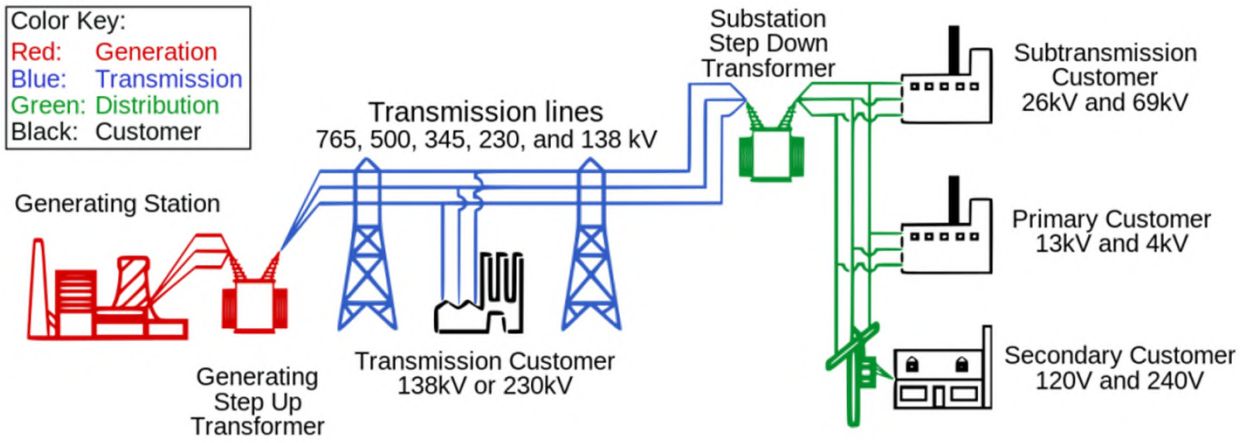
Cost Allocation is a Three Step Process

1. Functionalization – what purpose within the utility system does the cost serve

2. Classification – what customer usage characteristics caused the cost to be incurred

3. Allocation – how much cost did each customer class cause to be incurred and should pay

Functionalization



Functionalization will be important in the allocation of costs and design of rates:

- Generation and transmission allocation will reflect broader system characteristics, while distribution and customer costs will reflect more customer (or class)-specific characteristics

- Generation and transmission services can be sold to many customers (more fungible), while distribution and customer services are harder to resell (less fungible)

Classification

Primary classification categories:

1. **Demand-Related Costs (Capacity Costs) – vary with customer or class kW in instantaneous demand and viewed as fixed costs**

2. **Energy-Related Costs – vary with kWh of energy generated or consumed and viewed as variable costs**

3. **Customer-Related Costs – vary with the number of customers on the system and viewed as fixed costs**

Generalized Cost Allocation

Cost Allocation Results

Commercial Customer Class

Generation Energy Revenue Requirement
Generation Demand Revenue Requirement

Transmission Revenue Requirement

Distribution Revenue Requirement

Customer Revenue Requirement

The Simplest Generalized Rate Design

Commercial Customer Class

Generation Energy Revenue Requirement
Generation Demand Revenue Requirement

/ class annual kWh → $/kWh energy charge

Transmission Revenue Requirement

/ annual class billing kW → $/kW demand charge

Distribution Revenue Requirement

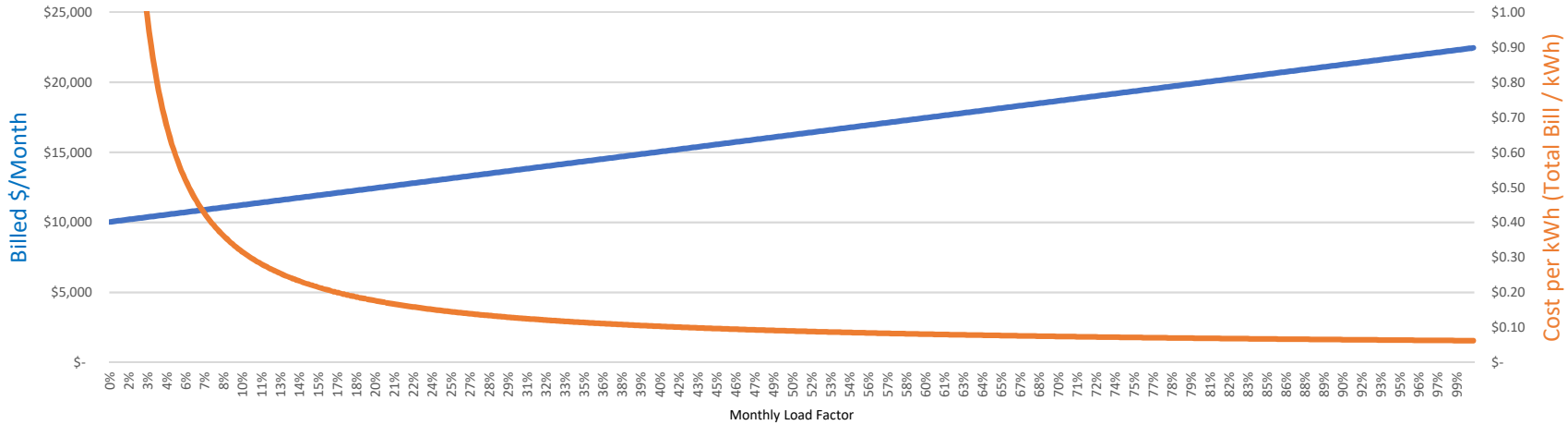
Customer Revenue Requirement

/ # of customers in class / 12 → $/month customer charge

The Simplest Generalized Rate Design

Commercial Customer Class – Cost Based, 500 kW Customer

Charge	Revenue Requirement	Billing Determinants	Rate
Energy (inc. Fuel)	$87,979,171	2,547,138,170	$0.0345/kWh
Demand	$140,175,055	7,136,267	$19.64/kW
Customer	$3,270,189	17,327	$188.73/month
Total	$231,424,415		



Demand Charges in Focus

COVID-19 has brought demand and capacity charges into focus:

- Even with reduced runtime and kWh usage, billed charges for demand may not drop or only drop a small amount
  - Equipment may still have same contribution to building demand
  - Reduction in demand may trigger ratchets, minimum contract demands, or not impact capacity charges from competitive suppliers (which are based on last year's demands)

- First Result: Uncomfortable discussions to explain the disconnect between expectation and reality of bill reductions

- Second Result: Requests that you ask your utility vendors to reduce their demand charges

Demand Charges in Focus

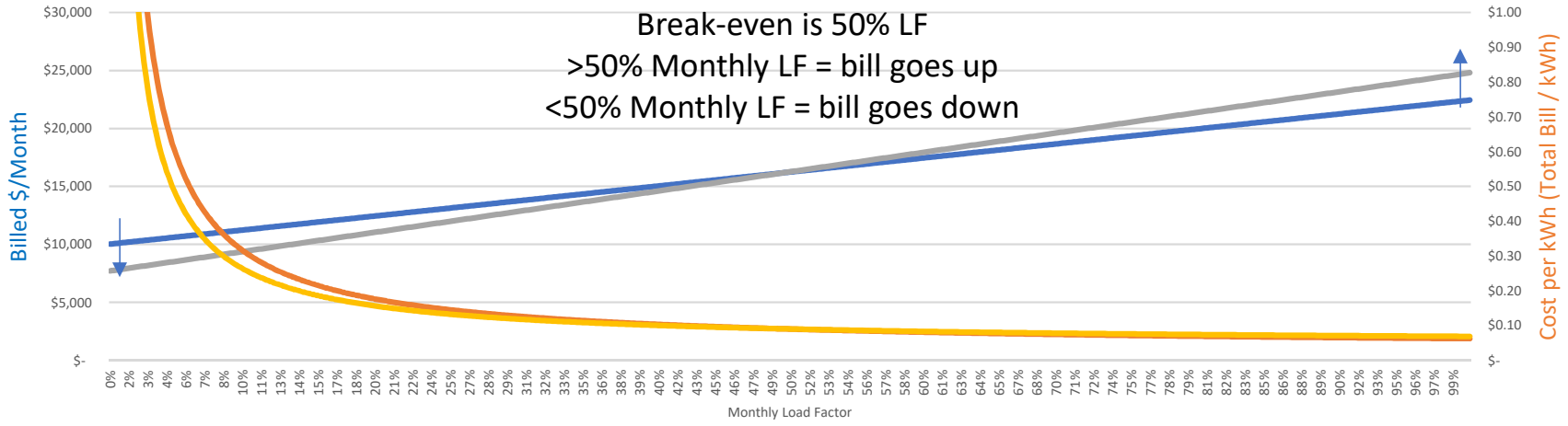
Managing expectations…

- Changes to rate structure almost always require a rate case to do, and you would have to intervene in the case and support the change through expert testimony
- Rates are set based on “normal” conditions – while lower demand charges seem like they would help now, would they help during normal conditions?
- Revenues not recovered through demand charges have to be recovered somewhere else in the rate schedule (otherwise other customer classes would have to subsidize you) – typically reduced demand charge revenues are shifted to the energy charge
- The calculation of ratcheted demand charges contains a twist that may hurt or help…

Reduce Demand + Increase Energy

Commercial Customer Class – $15/kW Target Demand Charge, 500 kW Customer

Charge	Revenue Requirement	Billing Determinants	Rate
Energy (inc. Fuel)	$121,110,221	2,547,138,170	$0.0476/kWh
Demand	$107,044,189	7,136,267	$15.00/kW
Customer	$3,270,189	17,327	$188.73/month
Total	$231,424,415		



Demand Charges in Focus: Ratchets

Caveat: This is a discussion of ratchet mechanics and not to be construed as advocacy for implementation of ratchets in utility rates

Why do ratchet mechanics matter?

- Ratcheted demand charges use different billing determinants to calculate the rate than non-ratcheted demand charges

- Ratchets increase the kW billed to customers in a rate class – these increases are recognized in the calculation of the rate

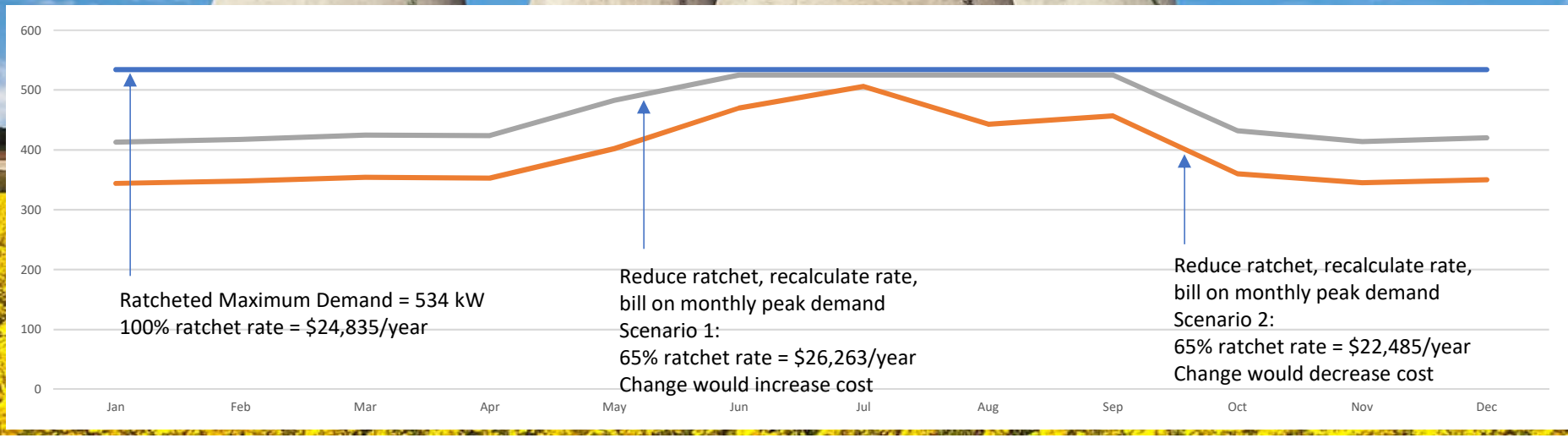
Charge	Billing Determinants
Power Supply Demand – Primary (65% ratchet tied to previous June, July, August, September, and October demands)	14,197,864 kW
Primary Distribution Rate (100% ratchet tied to last 12 months billed demand)	17,406,928 kW
Sources: Michigan Docket U-20162, Exhibit A-16, Schedule F3 and DTE D11 Tariff	

Demand Charges in Focus: Ratchets

If the ratchet is eliminated or reduced, it will change how the charge is calculated:

Charge	Revenue Requirement	Billing Determinants	Rate
$67,463,300, 100% ratchet	$67,463,000	17,406,928 kW	$3.88/kW
$67,463,300, 65% ratchet	$67,463,000	14,197,864 kW	$4.75/kW

Depending on your load shape during normal conditions, this could increase your bills.



Thank you!

Feel free to reach out with questions or for more information

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