RAP® Energy solutions for a changing world

Flexible and Customizable: Designing Decoupling for Your State

Presented by Richard Sedano and Janine Migden-Ostrander

March 1, 2017

The Regulatory Assistance Project (RAP)®

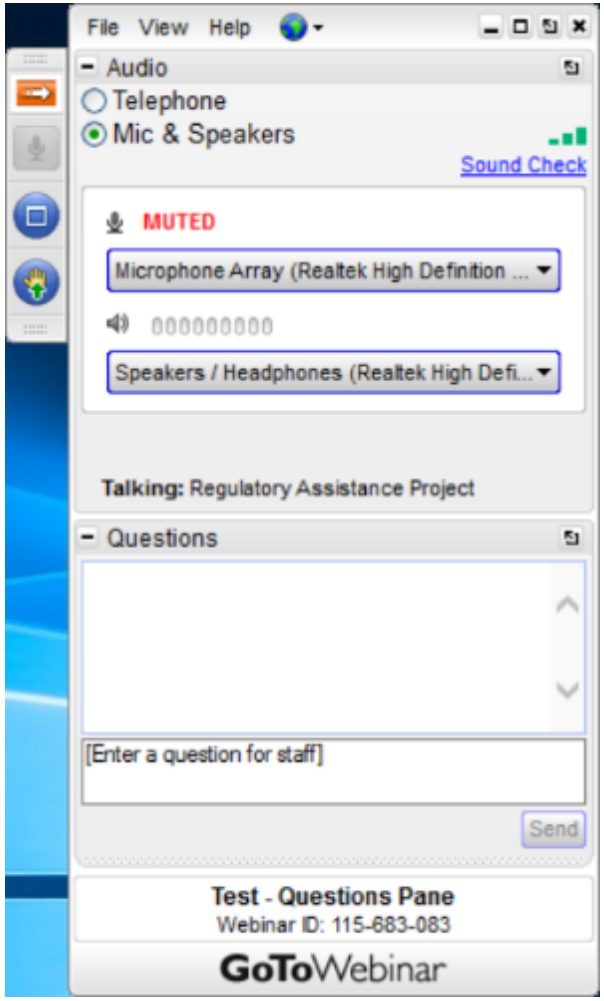
Our Experts

Richard Sedano

Janine Migden-Ostrander

Questions

Please send questions through the Questions pane.



First paper

Revenue Regulation and Decoupling:

A Guide to Theory and Application

What Did We Cover?

- How decoupling works
- Full, partial, limited decoupling
- Revenue functions
- Rate design and decoupling
- Current v. accrual methods
- Weather, economy, other risks
- Earnings volatility risks/costs of capital
- Other measures and how they relate to decoupling
- Concerns over decoupling
- Communicating with customers about decoupling
- More . . .

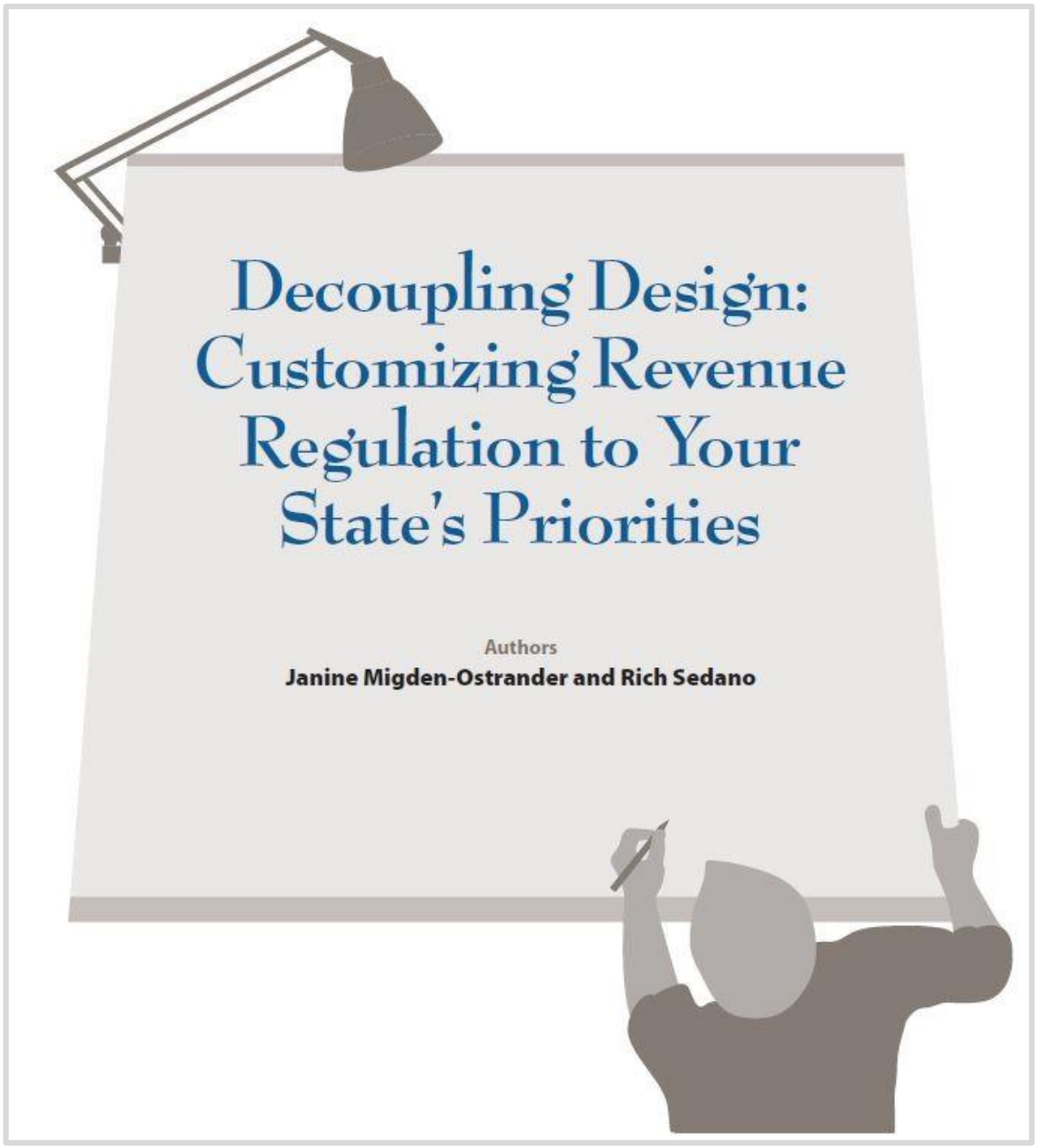
Second paper

Decoupling Case Studies: Revenue Regulation Implementation in Six States

Authors

Janine Migden-Ostrander, Betty Watson, Dave Lamont, Richard Sedano

Third paper


Decoupling Design:
Customizing Revenue
Regulation to Your
State's Priorities
Authors
Janine Migden-Ostrander and Rich Sedano

What Are We Focused On?

- The throughput incentive
  - A part of traditional regulation
    - As practiced in a majority of states, most munis and coops
  - Utility revenue driven by sales
  - Utility motivated to discourage sales reductions, to encourage load building
    - Effect on margins is magnified

What's the Problem?

- The throughput incentive
  - Discourages end use energy efficiency
  - Discourages customer-sited resources
  - Discourages system efficiency
    - Investments that lower costs while lowering sales
  - Is a Risk Factor, promoting revenue volatility

What's the Problem?

- How to align regulation with a distributed resource-oriented power system?
  - The throughput incentive seems in conflict
  - How government can send consistent signals with policy AND regulation

Impact on Earnings of Sales Decline for Illustrative SW Electric Utility

% Change in Sales	Revenue Change		Impact on Earnings		
	Pre-tax	After-tax	Net Earnings	% Change	Actual ROE
5.00%	$9,047,538	$5,880,900	$15,780,900	**59.40%**	17.53%
4.00%	$7,238,031	$4,704,720	$14,604,720	**47.52%**	16.23%
3.00%	$5,428,523	$3,528,540	$13,428,540	**35.64%**	14.92%
2.00%	$3,619,015	$2,352,360	$12,252,360	**23.76%**	13.61%
1.00%	$1,809,508	$1,176,180	$11,076,180	**11.88%**	12.31%
0.00%	$0	$0	$9,900,000	**0.00%**	11.00%
-1.00%	-$1,809,508	-$1,176,180	$8,723,820	**-11.88%**	9.69%
-2.00%	-$3,619,015	-$2,352,360	$7,547,640	**-23.76%**	8.39%
-3.00%	-$5,428,523	-$3,528,540	$6,371,460	**-35.64%**	7.08%
-4.00%	-$7,238,031	-$4,704,720	$5,195,280	**-47.52%**	5.77%
-5.00%	-$9,047,538	-$5,880,900	$4,019,100	**-59.40%**	4.47%

Decoupling

- A solution to the throughput incentive
  - Focuses on allowed revenue
  - Effective at solving the throughput incentive
  - No change in retail rate design
- … is really a vehicle with many choices that PUCs can make
  - To achieve important outcomes

Rate of Return Regulation Refresher

Revenue Requirement

=

Test Year Expenses + Depreciation + Taxes + (Rate of Return * Rate Base)

Rate of Return Regulation Refresher

Revenue Requirement recovered from:

(# of Customers * Customer Charge) +
(Projected Sales * Price/kWh)

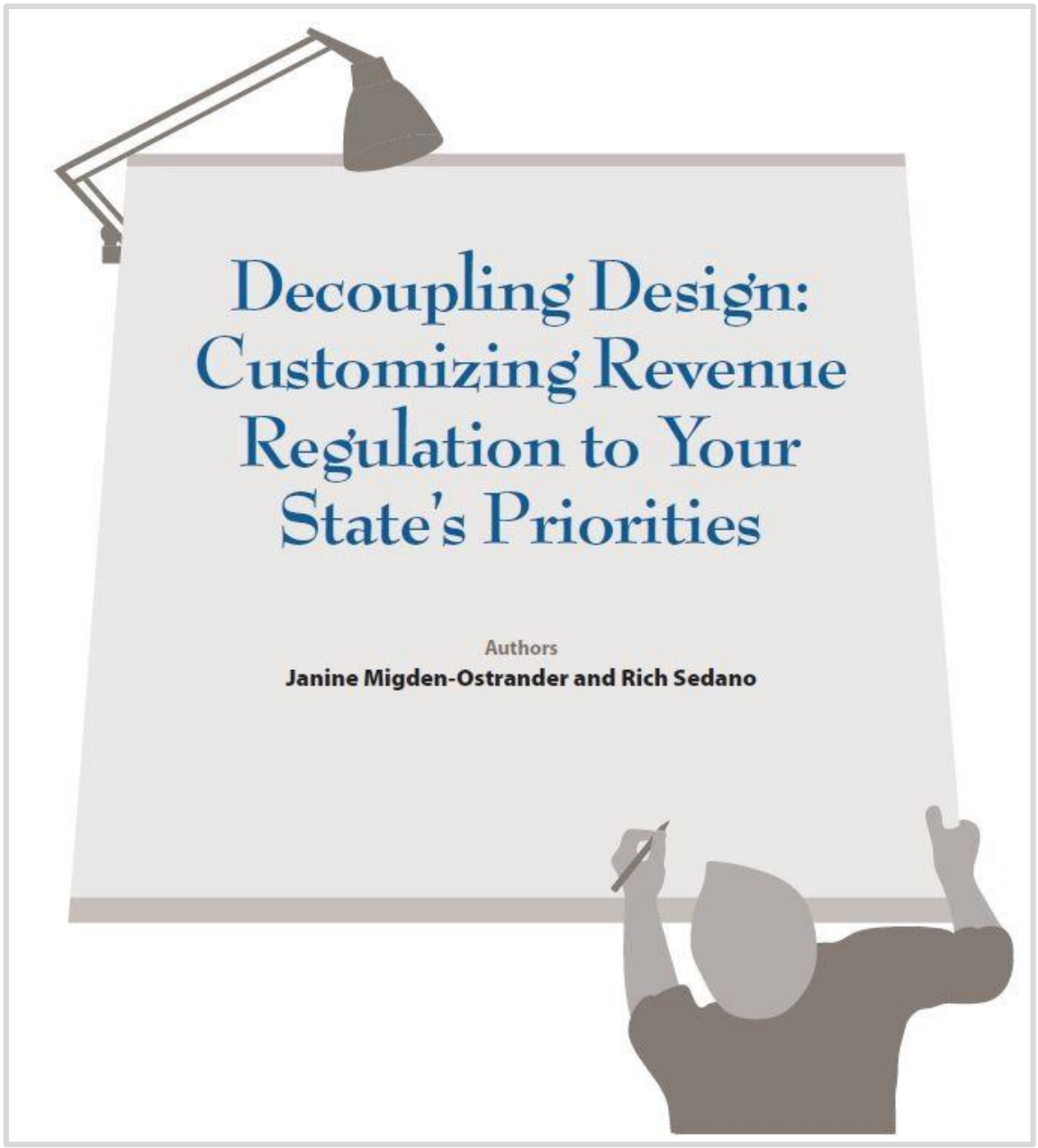
Rate of Return Regulation Refresher

Price/kWh

=

(Revenue Requirement –
Customer Service Charge Revenue)/
Projected Sales

– Price/kWh collects all fuel costs and, generally, non-customer-specific fixed costs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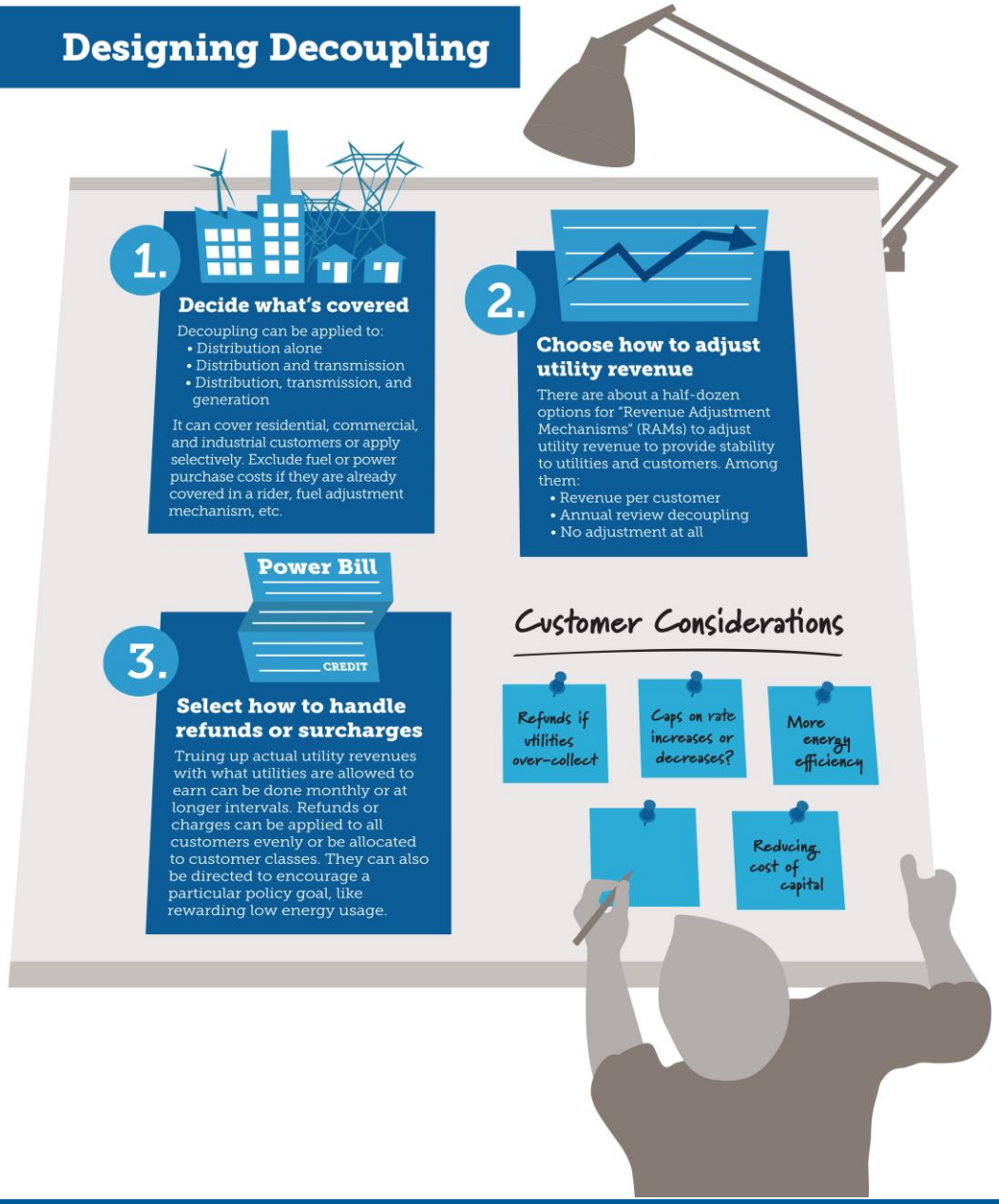
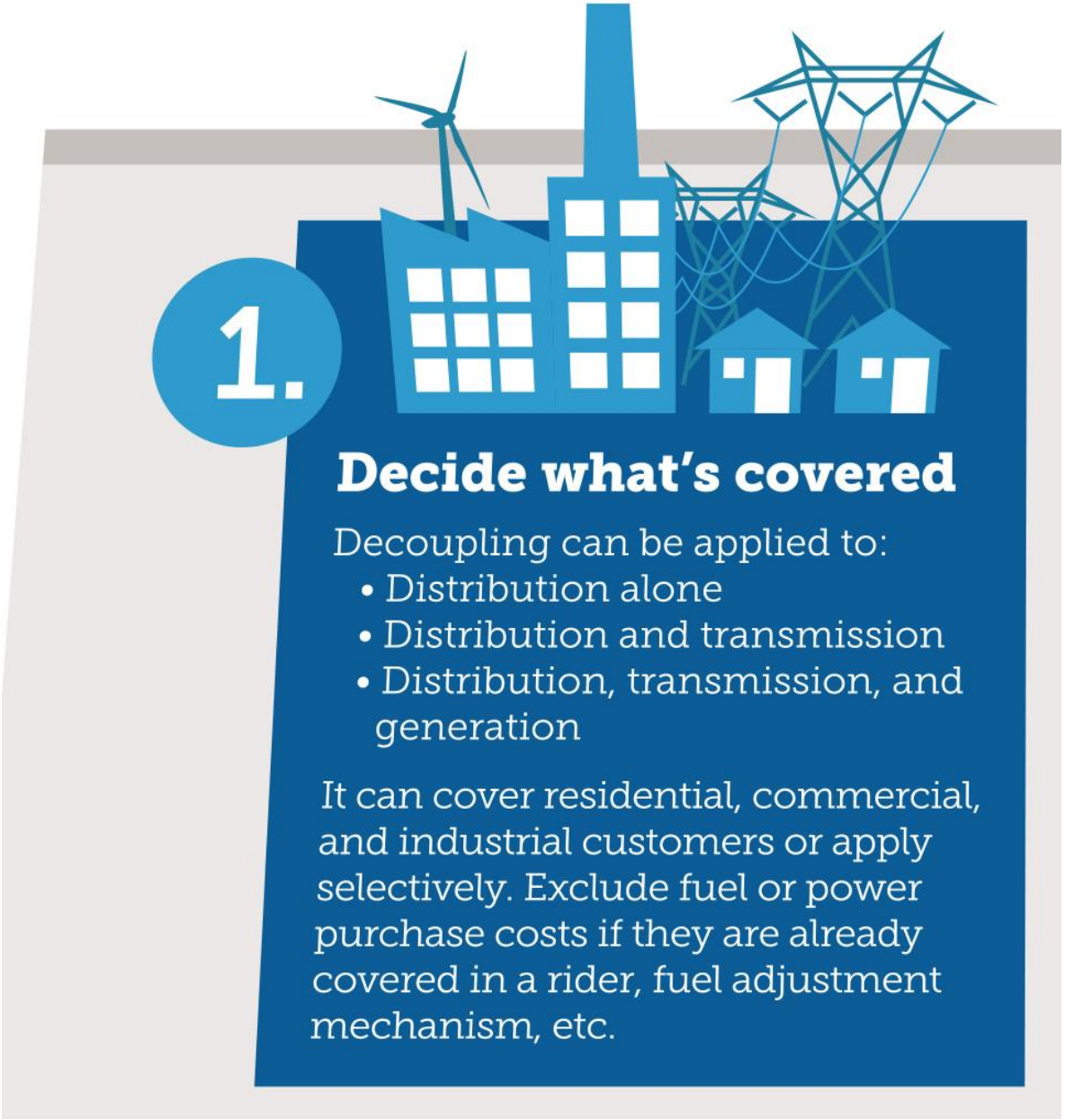
Designing Decoupling

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Decide what's covered
Decoupling can be applied to:
• Distribution alone
• Distribution and transmission
• Distribution, transmission, and generation
It can cover residential, commercial, and industrial customers or apply selectively. Exclude fuel or power purchase costs if they are already covered in a rider, fuel adjustment mechanism, etc.

What's Covered?

Decide What's Covered

Applicability of Utility Function

- Transmission & Distribution
- Transmission, Distribution, & Generation

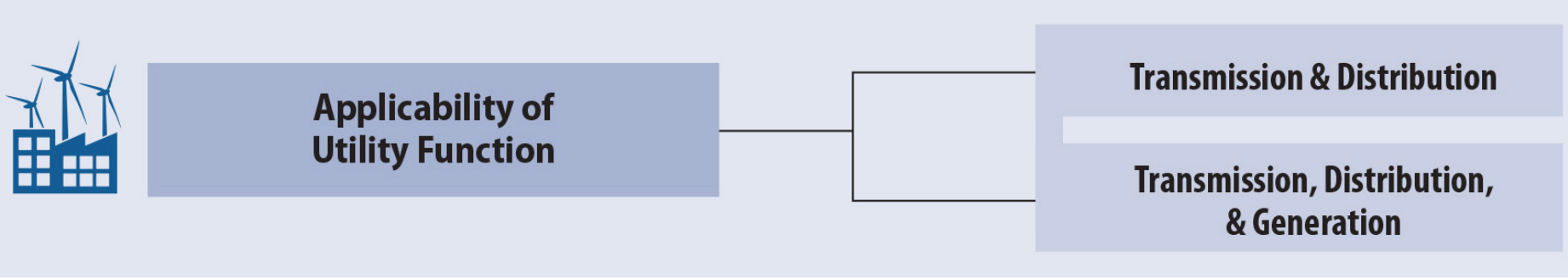
Applicability of Revenue Regulation to Customer Classes

- Residential and Small Commercial
- All

Costs Included in Decoupling Mechanism

- Base Rates Only
- Riders
  - Some Riders, Not Others
  - All Costs Including All Riders

What's Covered?



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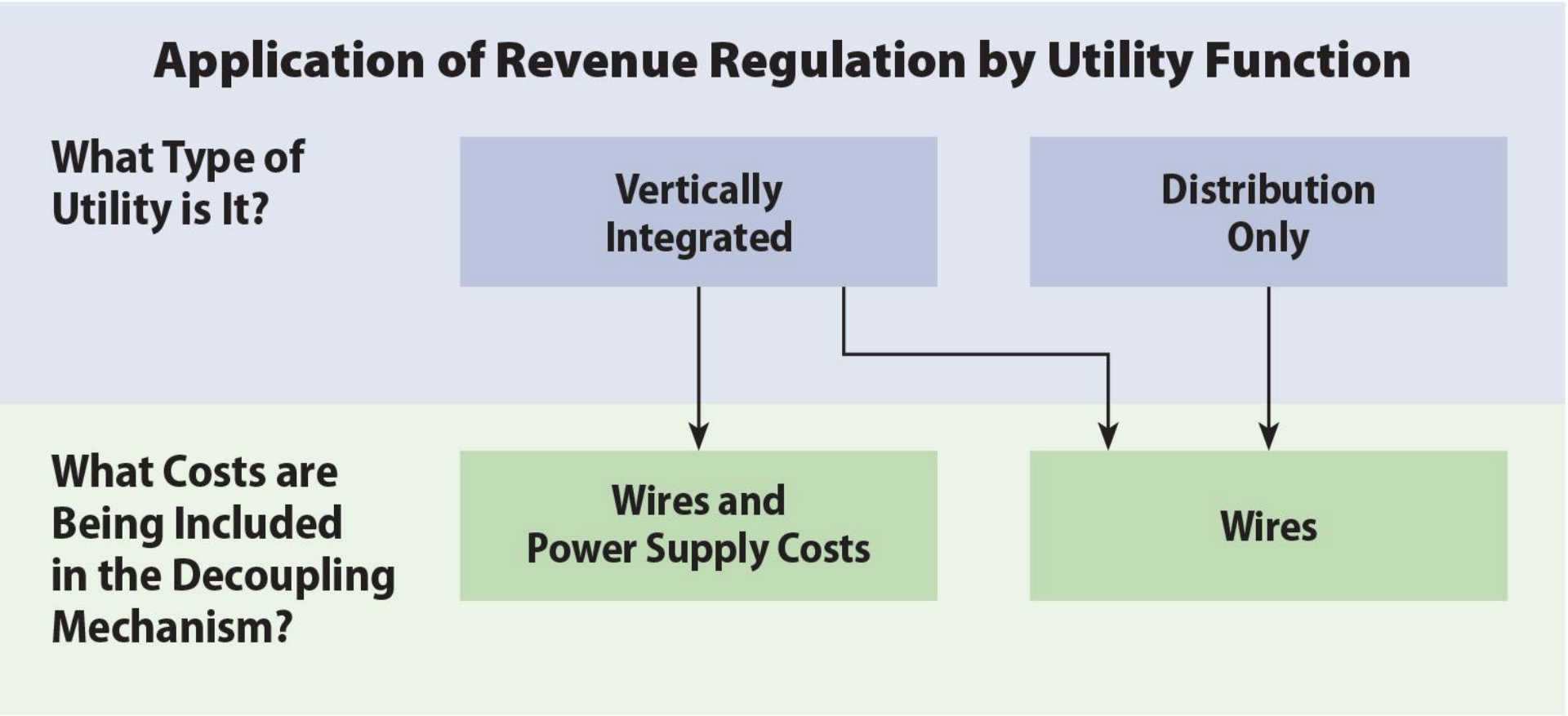

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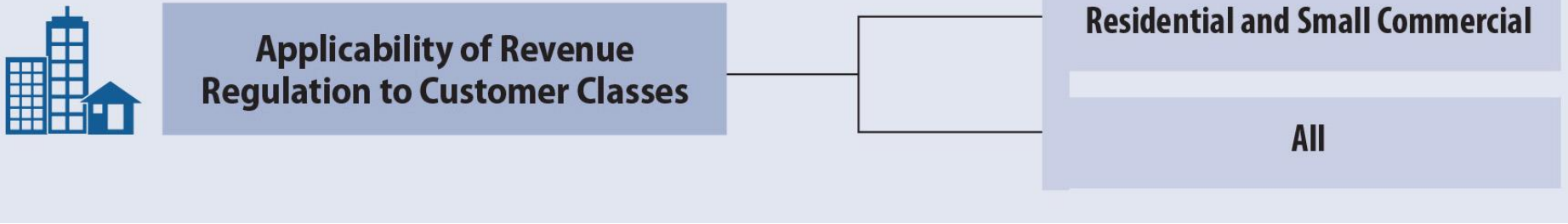

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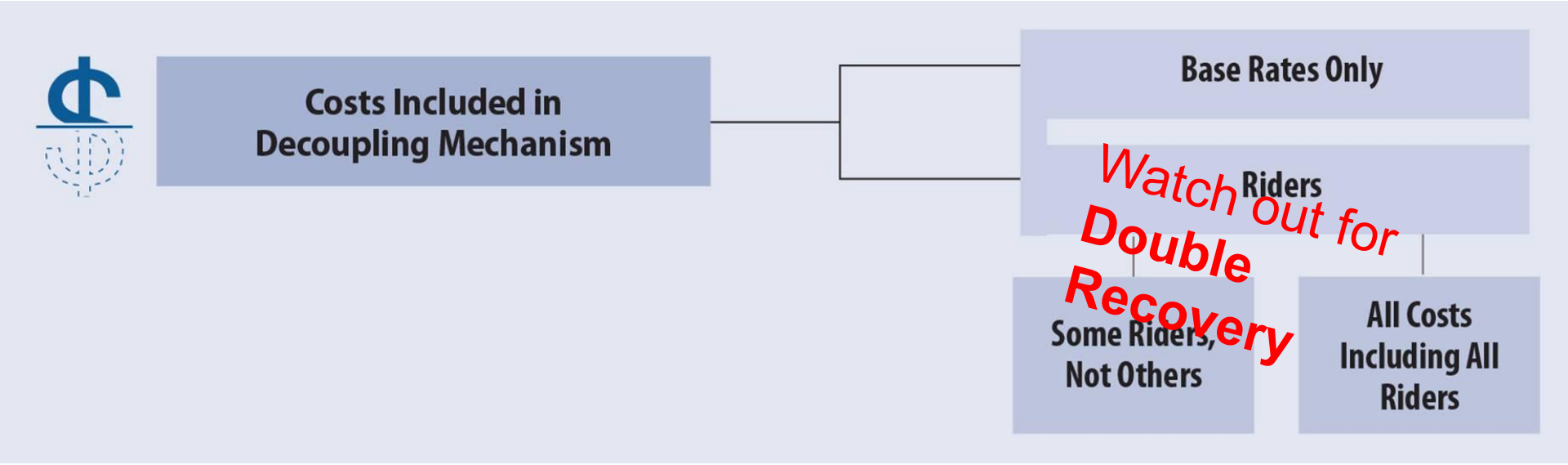
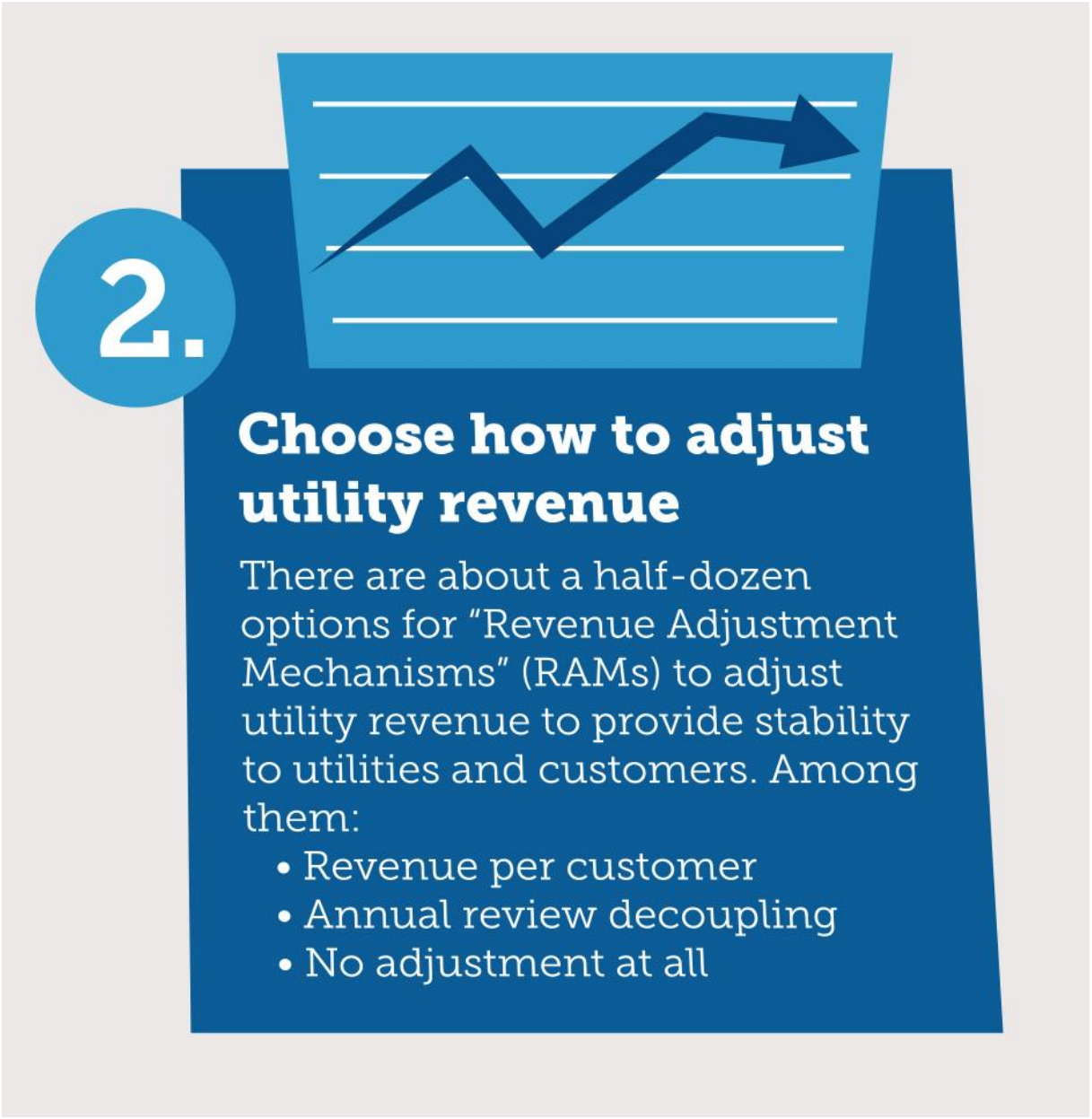


Double Recovery Issue

- Concern if generation costs are included in the decoupling mechanism that uses RPC.
  - Risk - number of customers increases while generation costs decrease due to depreciation;
  - Fuel, purchase power costs recovered in fuel adjustment mechanisms without an offset of declining investment cost which would be captured in a rate case.
    - If regulators retain FAC, then FAC must account for changes in investment and operating costs if rate cases are not occurring to adjust. Otherwise, the value of generation is overstated.

Costs Established in a Rate Case

Costs	Amount	What it Covers
Base rates for power for vertically integrated utilities only	$0.04/kWh	Investment costs in power plants and transmission lines; non-fuel O&M for power plants and transmission lines
Base rates (delivery)	$0.04/kWh	Investment costs in distribution facilities; O&M for distribution facilities; all overhead costs (often including those attributable to power supply)
Fuel rate (subject to adjustment in the fuel adjustment clause [FAC]) – applicable to vertically integrated utilities	$0.02/kWh	All fuel and purchased power expense, net of sales for resale, plus transmission by others
Total rate to consumer	$0.10/kWh for vertically integrated utilities; $0.04 for distribution-only utilities	


2.
Choose how to adjust utility revenue
There are about a half-dozen options for "Revenue Adjustment Mechanisms" (RAMs) to adjust utility revenue to provide stability to utilities and customers. Among them:
• Revenue per customer
• Annual review decoupling
• No adjustment at all

Choose How to Adjust Utility Revenue

Frequency of Rate Cases to Determine Revenue Requirement

- Rate Case as Needed
- Mini or Full Rate Case Annually
- Rate Case Every 3 to 5 Years

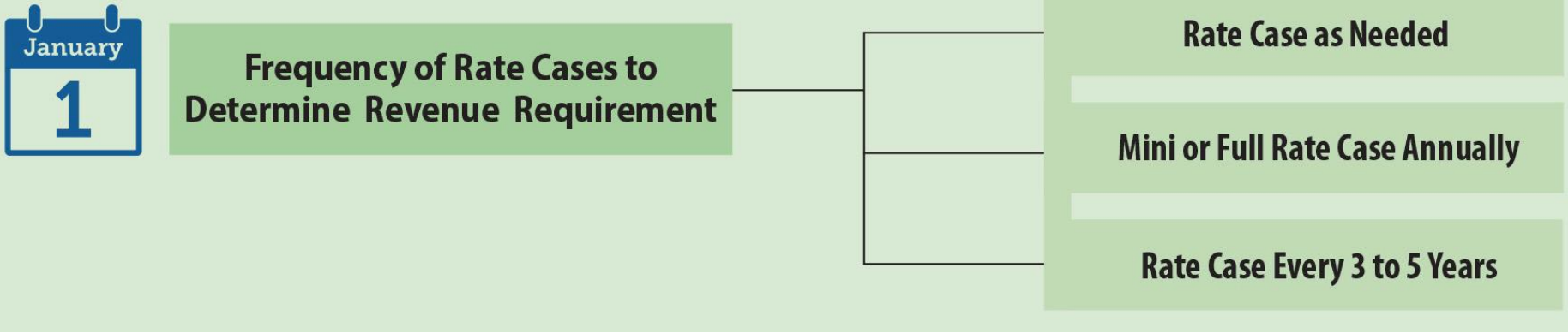
Ex Ante Adjustment to ROE/Capital Structure

- Yes
- No

Choosing The Revenue Adjustment Mechanism

- None
- Stair/Indexing
- Revenue Per Customer
- Attrition
- K Factor

How to Adjust Revenue?



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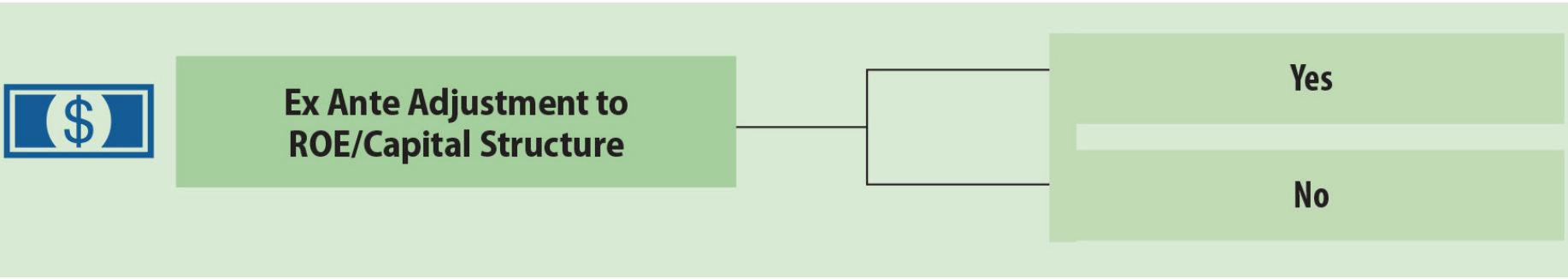

Illustration of Debt/Equity Ratio Shift

Without Decoupling	Ratio	Cost	Weighted with-tax cost of capital
Equity	48%	10%	7.38%
Debt	52%	7%	2.37%
Weighted cost			9.75%
Revenue requirement: $1 Billion Rate Base			$97,506.154
With Decoupling			
Equity	45%	10%	6.92%
Debt	55%	7%	2.5%
Weighted cost			9.43%
Revenue Requirement: $1 Billion Rate Base			$94,255,769
Savings Due to Decoupling Cost of Capital Benefit:			**$3,250,385**

Questions

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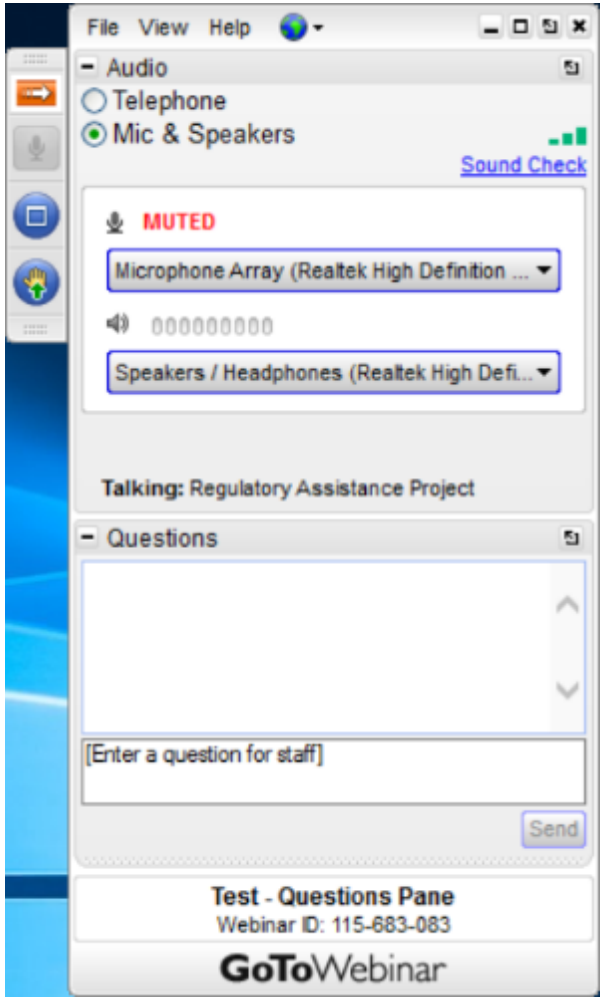


How to Adjust Revenue?

Choosing The Revenue Adjustment Mechanism

- None
- Stair/Indexing
- Revenue Per Customer
- Attrition
- K Factor

The Revenue Adjustment Mechanisms

- **No RAM** – No adjustment made to revenue requirements. Rates are not adjusted until the next rate case
- **Stair-Step** – These are predetermined adjustments made in the last rate case based on forecasts of projected cost increases.
- **Indexing** – Adjustments to the revenue requirements are tied to factors such as inflation, industry productivity, customer growth

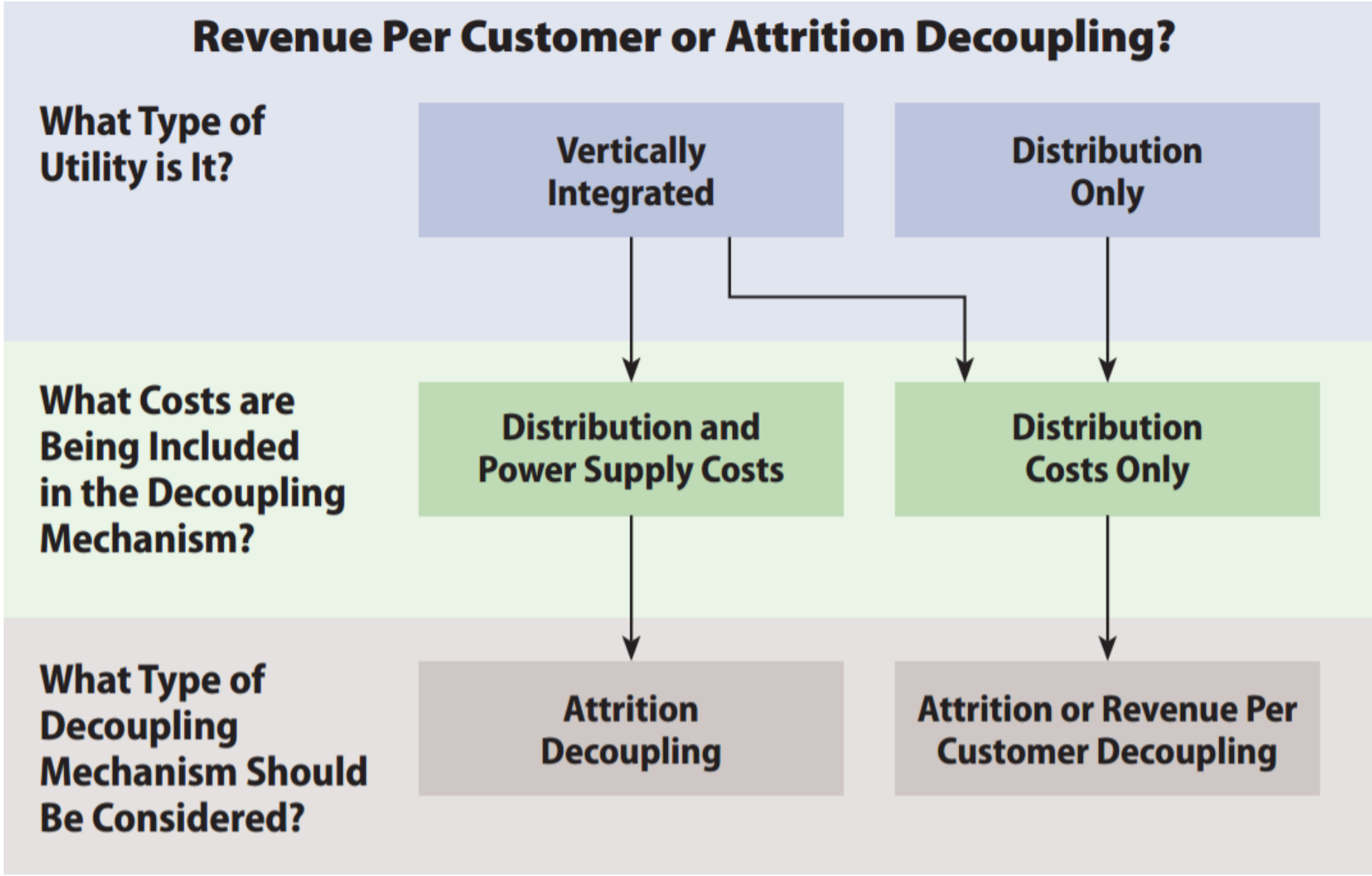
The Revenue Adjustment Mechanisms

- **Revenue Per Customer** – Revenue requirement determined on a per customer basis and is adjusted for the total number of customers served.
- **Annual Review Decoupling (aka Attrition Decoupling)** – Rates are periodically adjusted for incremental and decremental known and measurable changes to rate base and operating expenses.

The Revenue Adjustment Mechanisms

- **K Factor** – an adjustment used to increase of decrease overall growth in revenues between rate cases
- **Hybrid** – Allows regulators to combine various RAM mechanisms to adjust rates.

Revenue Per Customer or Attrition Decoupling?



Periodic Decoupling Calculation

From the Rate Case

Target Revenues	$10,000,000
Test Year Unit Sales	100,000,000
Price	$0.10000

Post Rate Case Calculation

Actual Unit Sales	99,500,000
Required Total Price	$0.1005025
Decoupling Price Adjustment	$0.0005025

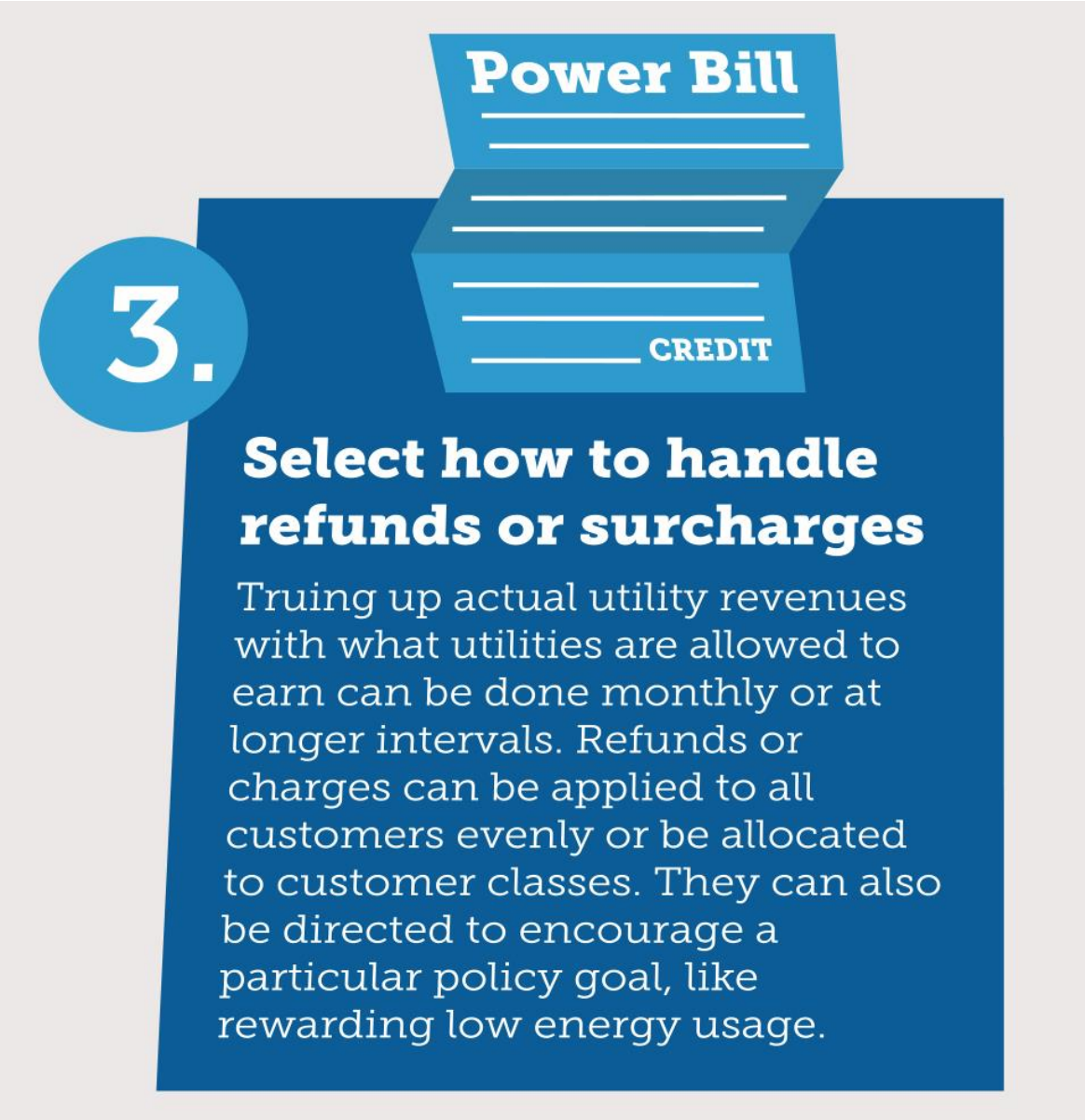
Revenue Per Customer Periodic Decoupling Calculation

From the Rate Case

Target Revenues	$10,000,000
Test Year Unit Sales	100,000,000
Price	$0.10000
Number of Customers	200,000
Revenue per Customer (RPC)	$50.00

Post Rate Case Calculation

Number of Customers	200,500
Target Revenues ($50 x 200,500)	$10,025,000
Actual Unit Sales	99,750,000
Required Total Price	$0.1005013
Decoupling Price "Adjustment"	$0.0005013


Power Bill
CREDIT
3.
Select how to handle refunds or surcharges
Truing up actual utility revenues with what utilities are allowed to earn can be done monthly or at longer intervals. Refunds or charges can be applied to all customers evenly or be allocated to customer classes. They can also be directed to encourage a particular policy goal, like rewarding low energy usage.

Select How to Handle Refunds or Surcharges

Surcharge/ Credit Symmetry

- Yes
- No

Allocation Of Over And Under Recovery To All Rate Elements

- Across the Board
- By Class
- By Rate Element

Choosing A Rate Adjustment Method

- Via a Rider
- Via Base Rate

Frequency of True-Ups

- Accrual (Choose Period up to a Year)
- Current Method (Monthly)

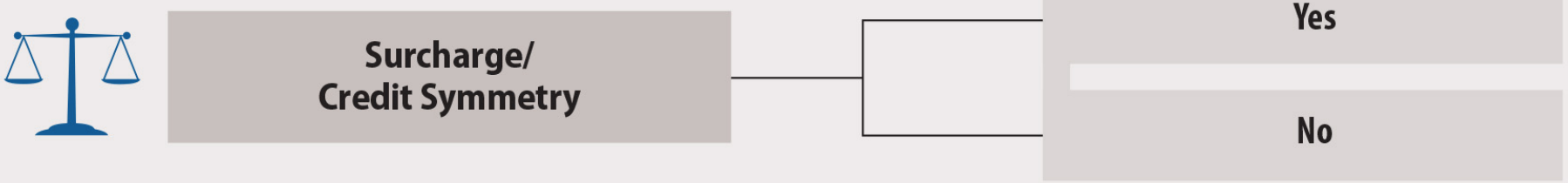
Caps on the Size of Decoupling Adjustment

- None
- Yes
  - Revenue
  - Rates

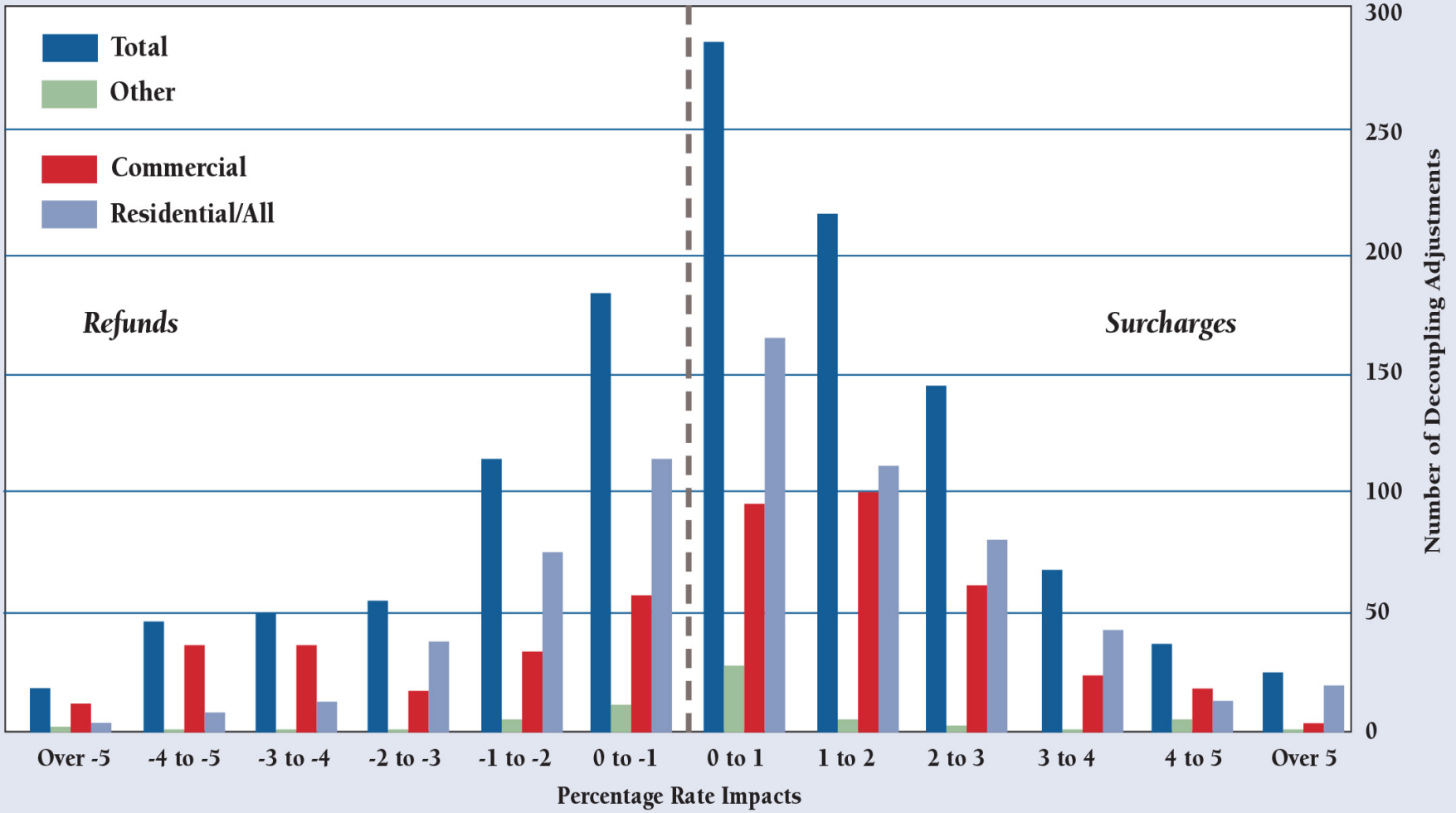
Carrying Charges for Decoupling Deferrals

- Risk-Free Rate
- Weighted Average Cost of Capital
- Symmetry

How to Handle Refunds/Surcharges

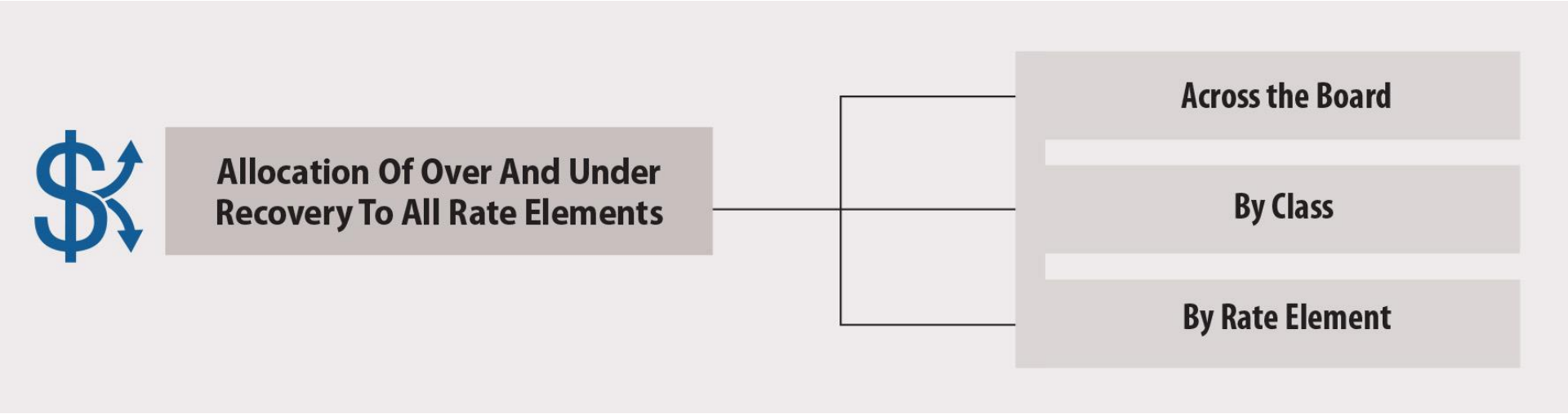


Changes in Rates From Decoupling Mechanisms 2005 to 2011[48]



Source: A Decade of Decoupling for US Energy Utilities: Rate Impacts, Designs, and Observations, Pamela Morgan, 2012.

How to Handle Refunds/Surcharges



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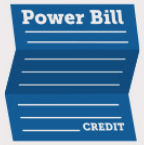

Choosing A Rate Adjustment Method

- **Via a Rider**
- **Via Base Rate**

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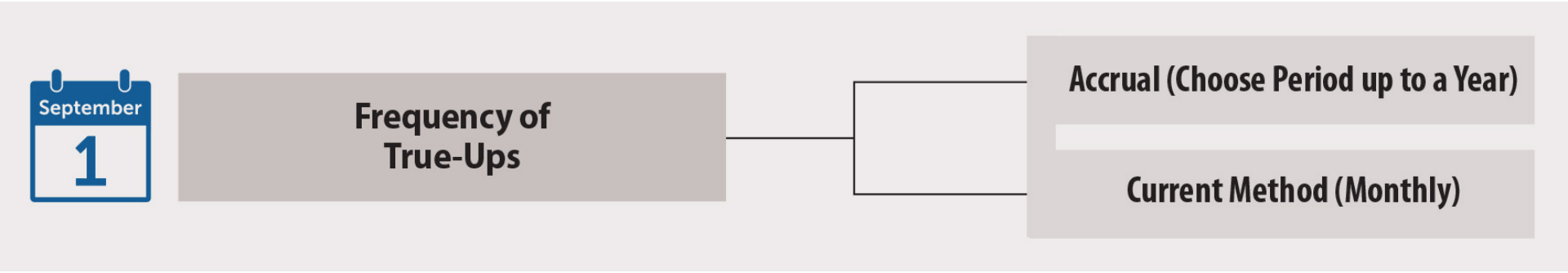

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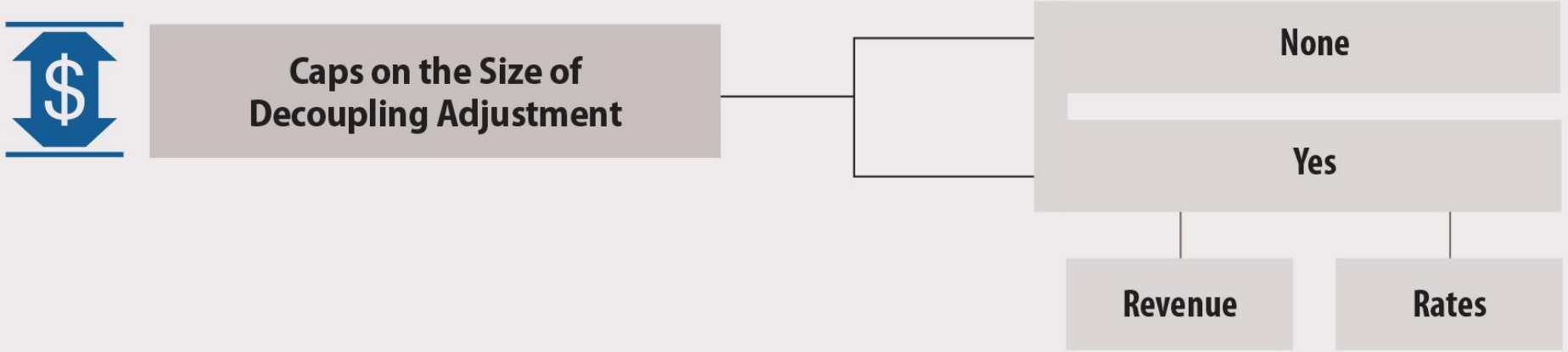

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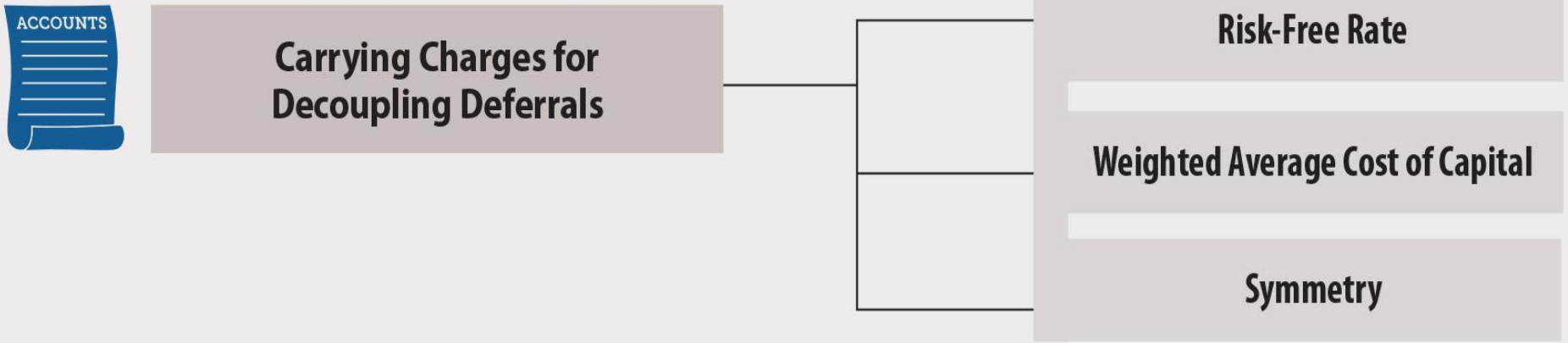

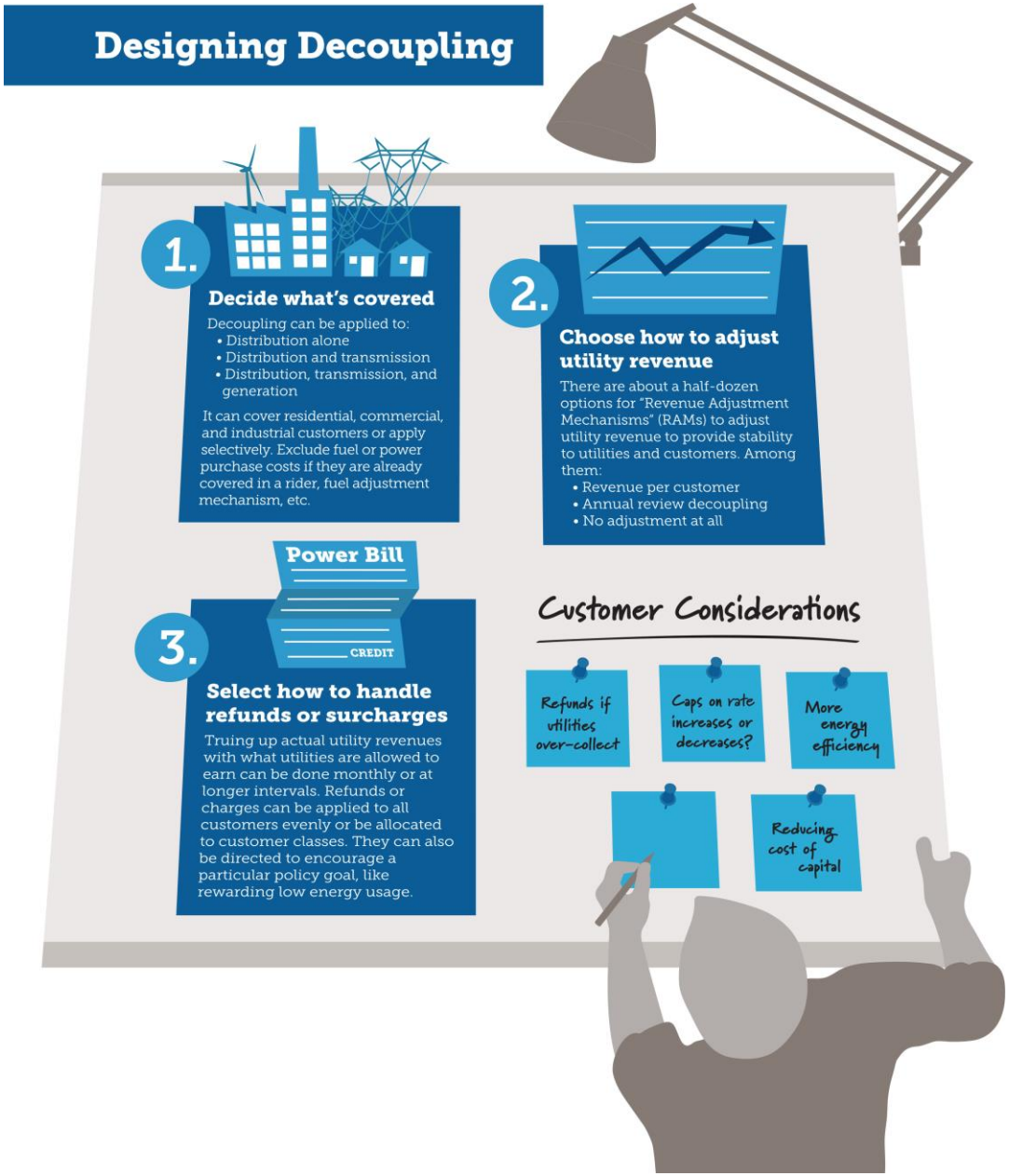
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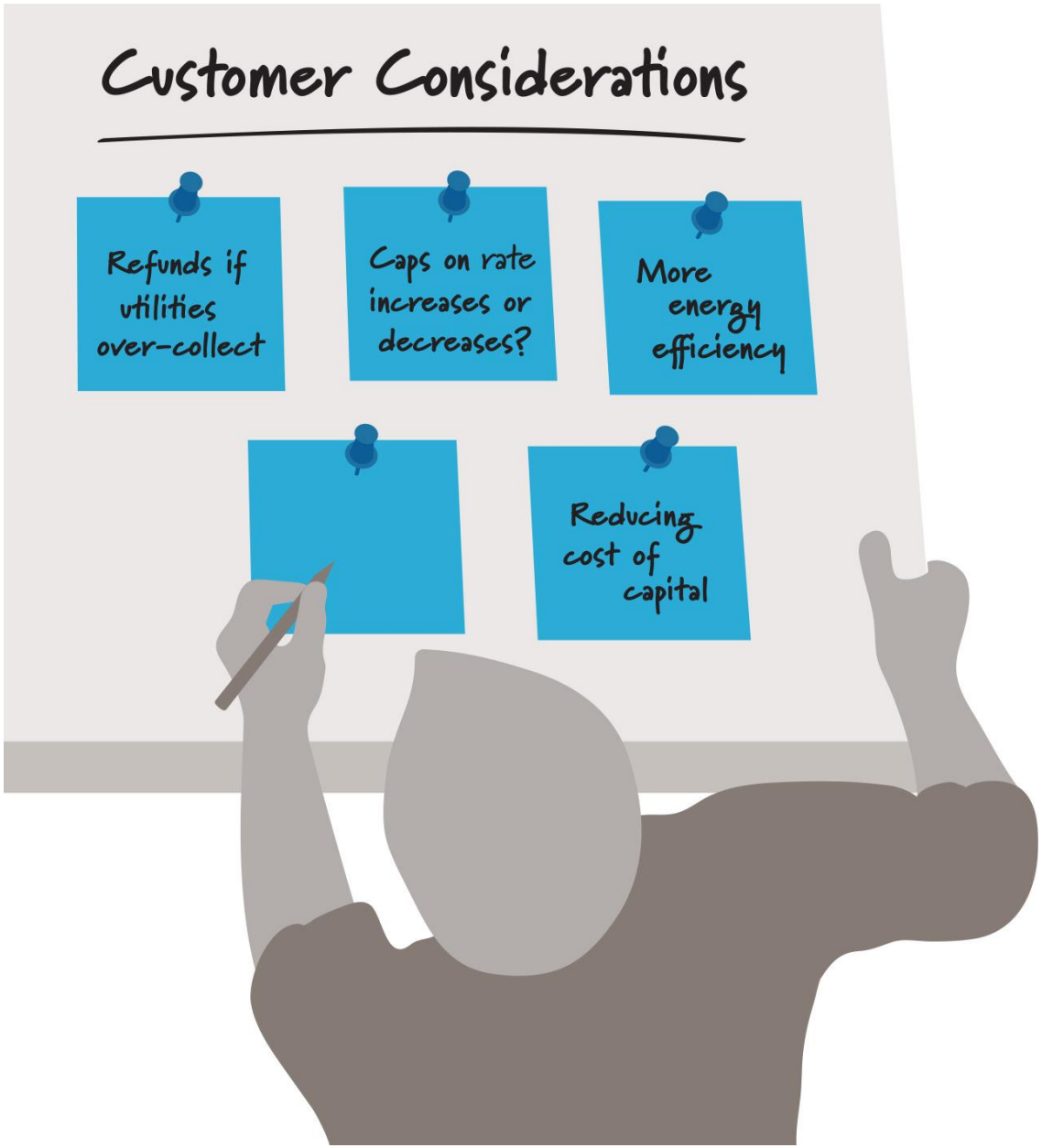
Customer Considerations
Refunds if utilities over-collect
Caps on rate increases or decreases?
More energy efficiency
Reducing cost of capital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Customer Considerations

Using Rate Design and Decoupling Surcharges to Effect Policy Goals

	Summer	Winter	
Customer Charge	$7.00	$7.00	
First 500 kWh	$0.80	$0.073	Minus any decoupling credit
Next 2,500 kWh	$0.102	$0.093	Plus any decoupling surcharge
Over 3,000 kWh	$0.120	$0.113	Plus any decoupling surcharge

Design Approaches to Protect Customers

- Symmetry – ensure that credits are provided.
- Stability: cap on rate changes
- Changes to capitalization ratio to reflect risk reductions
- Bill simplification

Design Approaches to Protect Customers

- Direct more energy efficiency/DERs
  - Decoupling conditioned on comprehensive programs
- Direct more distribution efficiency
- Low income provisions
  - Rate design approaches
  - EE programs directed towards LI

Summary of Potential Elements

Element	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7
Function	Distribution	Distribution and transmission	All functions				
Customer Class	Residential and small commercial	All but large industrial	All classes				
Excluded Costs	Costs in riders	Riders plus production costs	All variable costs	Other			
Rate Case Frequency	No requirement	Annually	Every 3 to 5 years	Mini rate cases	Every 4 to 7 years	Other	
How Established	Negotiations in rate case	Statute	Rulemaking	Commission order			
RAM	None	Stair-step	Indexing	RPC	Annual review decoupling	K Factor	Hybrid
Symmetry	Yes	No					
Recovery Allocation	Across the board equally	Customer class contribution	Credit in first block	Surcharge in last block	Combination between options 1 and 4	Other, such as judgments on which rate elements receive surcharges and credits and which do not	Other
How Recovered	Rate case	Rider					
Frequency of True-Ups	Annually	Quarterly	Monthly	Other			
Carrying Costs	No	Yes, short-term debt	Yes, customer deposit	Yes, other			
Cap Methodology[54]	None	Percentage rate increase	Percentage revenue increase	Dollar amount	Other		
Regulatory Conditions	None	Energy efficiency requirement	Customer service	Distributed generation interconnection	Other		
Rate Design	Maintain customer connection-based fixed charge	Coupled with inclining block	Coupled with time-of-use	Combination	Other		
Rate of Return	No adjustment (wait for effects to play out)	ROE reduction ex ante	Capital structure adjustment ex ante	Other			
Performance Metrics	Applied to decoupling	Not applied	Negative only	Positive and negative			

Decoupling Mechanisms for Your Consideration

- Policy directions suggests increasing stress from the throughput incentive
- Rate design: increasing emphasis on price signals
- Decoupling works, aligns to policy
- Consumer welfare can be protected and furthered in decoupling
- Decoupling provides mechanism to ensure against utility over-recovery and excessive earnings
- Innovation: suited to support performance

Resources

Revenue Regulation and Decoupling:

A Guide to Theory and Application

Decoupling Case Studies:

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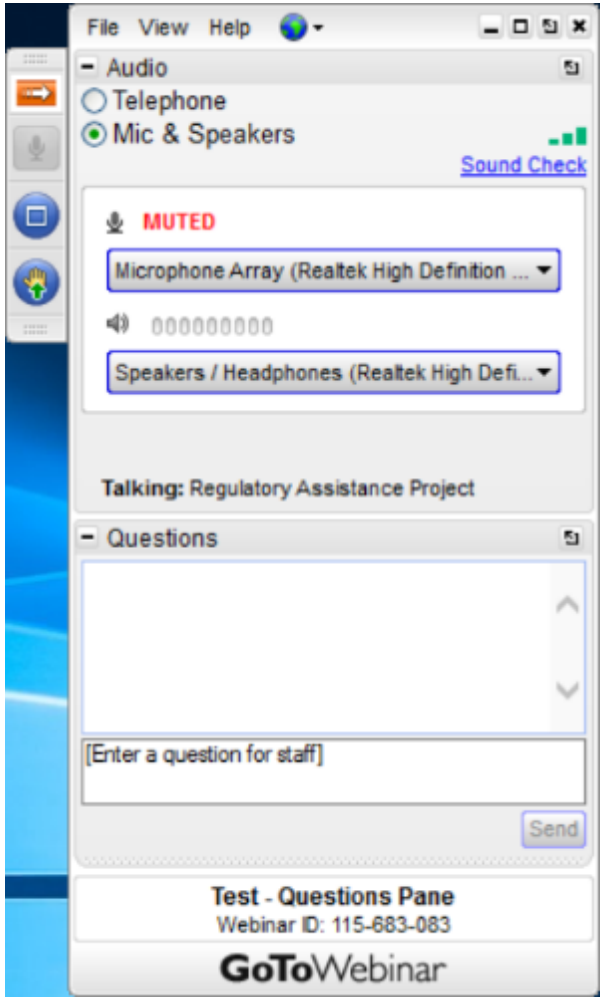

Decoupling: Key Take-Aways

- It's flexible, customizable
- It's been done before, so models exist
- It can serve the policy goals of most states
- It can be designed to protect consumers

About RAP

The Regulatory Assistance Project (RAP) is a global, non-profit team of experts that focuses on the long-term economic and environmental sustainability of the power sector. RAP has deep expertise in regulatory and market policies that:

- Promote economic efficiency
- Protect the environment
- Ensure system reliability
- Allocate system benefits fairly among all consumers

Learn more about RAP at www.raponline.org

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