

# DECOUPLING AND ITS IMPACT ON COST OF CAPITAL

PRESENTED TO

SURFA Members and Friends

PRESENTED BY

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Based on work joint with Mike Vilbert and Joe Wharton

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THE **Brattle** GROUP

# Agenda

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- Revenue Decoupling—What is it?
- The Use of Decoupling Mechanisms
- Estimation Method and Impact on Cost of Capital
- Discussion

# Revenue Decoupling—What is it?

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- Revenue Decoupling
  - Rate making policy severing direct link between sales volume and revenue
  - Natural policy for industries that are predominantly fixed cost
  - Eliminates the “through-put disincentive” for utilities to pursue energy efficiency programs\*
  - Reduces the financial impact of declining sales
- Types of Decoupling
  - True-up decoupling schemes
  - Lost fixed revenue adjustment mechanisms (LRAMs) target Energy Efficiency impacts only
  - Fixed-variable rate design
- Different utilities in the same jurisdictions may have different mechanisms – no one size fits all

# Decoupling: True-Up Revenue

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The most common form of decoupling / revenue stabilization

## Components:

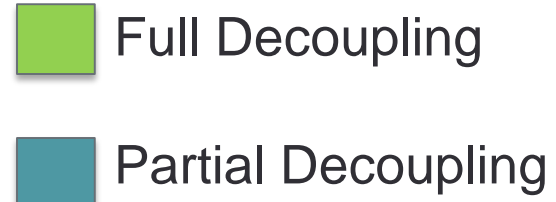
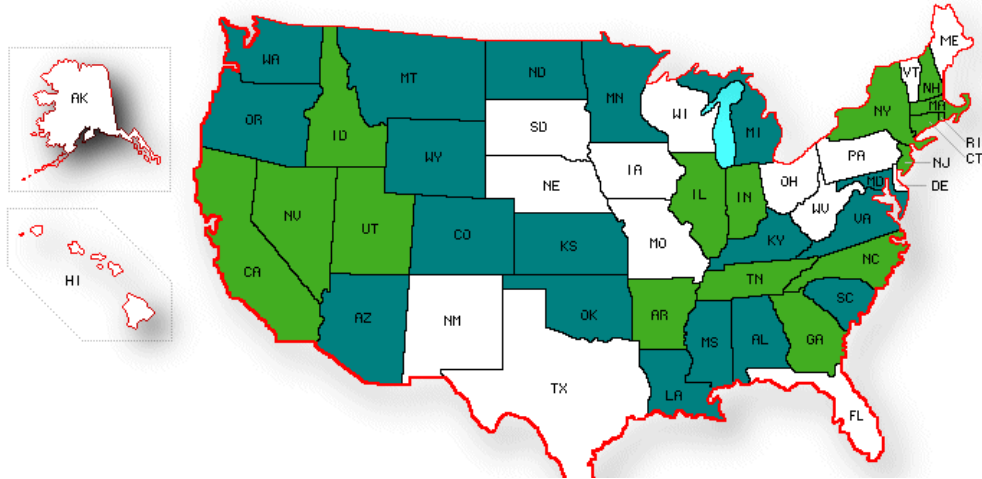
- Revenue target Mechanism
  - Sets the level of revenue to be collected each period; e.g., recovery of costs (incl. the return on and off capital) adjusted for customer growth
- Decoupling mechanism
  - Adjust rates periodically so the utility can achieve the revenue target

## Cautions:

- Not all plans are the same
- Different utilities operating in the same jurisdiction may have different plans even within an industry
- In some instances some gas (or electric utilities) have decoupling in a state while others do not

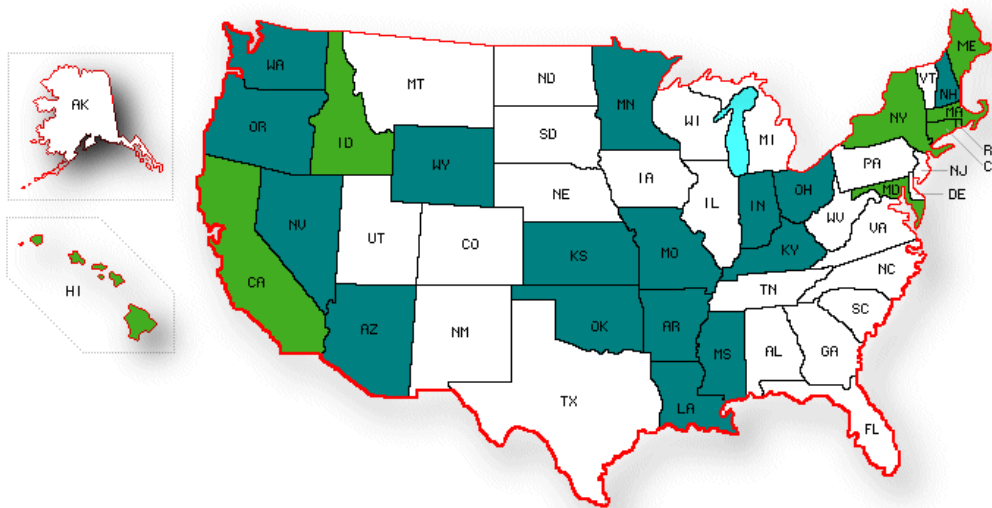
# Decoupling - Status

## Gas Utilities with Decoupling



Source: *Regulatory Research Associates*

## Electric Utilities with Decoupling



Notes:

- If one gas / electric has decoupling, the state is marked
- The timing of implementation would differ from company to company in most states

# Types of Decoupling

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**Lost Fixed Revenue:** Used fairly widely and often in combination with true-up mechanisms

**Construct:**

- Focus only on the lost revenue that can be attributed to the utility's conservation / energy efficiency / demand side management programs
- Impact is the actual conservation reduction in kWh times billing rates
- The impact is true-up in a later period

*Disputes over conservation vs. weather vs. other impacts*

**Fixed Variable Rate Design:** Not widely used

**Construct:**

- Fixed costs are recovered through fixed (monthly) charges
- Variable costs are recovered through volumetric charges

*In practice the fixed charges are too low to recover all fixed costs*

# Decoupling – Key Issues

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- Innovative ratemaking policy for heavy fixed cost industries in era of slow or declining growth
- Controversial in some states as conservation leads to increasing unit rates (decoupling was dropped in Michigan)
- Some argue that this revenue stabilization reduces risk, and therefore also reduces the Cost of Capital (CoC).
- Questions: Is decoupling a reaction to a risk-increasing situation, a trend in regulation, or something else
- What is the evidence re. decoupling and cost of capital
  - Credit rating agencies generally view decoupling favorable -> could affect debt cost
  - No empirical evidence decoupling impacts the cost of equity

# Impact on Cost of Capital, Profit and Credit Metrics

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## **Does decoupling reduce a company's cost of equity capital?**

- The cost of equity depends on systematic risk only, so the question is whether revenue stabilization reduces systematic risk
- Some regulators have reduced the allowed ROE under decoupling
- Empirically there is no evidence decoupling affects the ROE

## **Does decoupling reduce the cost of debt (credit)?**

- The cost of debt depend on total risk
- Credit rating agencies view decoupling mechanisms favorable

## **Does decoupling affect profit?**

- The expected profit should not be affected, but the pattern of realized profit may be as impacted as the utility is allowed to true-up for potential lost revenue / recover all fixed costs regardless of the magnitude of conservation



# Brattle's Studies

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- Cost of equity capital is driven by the **non-diversifiable** volatility in expected cash flows to shareholders (not the utility)
- Decoupling policy does reduce **volatility of revenues** albeit usually with a delay
- Decoupling has no effect on **volatility of costs** and may even increase the volatility of costs if volume affects pricing
- Reduction in volatility does not necessarily translate into a reduction in the cost of equity
  - Some volatility for any company is diversifiable; e.g., weather
  - Only non-diversifiable volatility affects cost of equity; e.g., market-wide movements such as the financial crisis

# Empirical Approach

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**Analysis integrates data/information on degree of revenue decoupling, with contemporaneous information on the estimated CoC as measured by the DCF estimates**

- Publicly traded companies, not their operating subsidiaries, have stock that is traded on exchanges and for which the CoC can be estimated
- State regulated operating companies, not their traded parent, have regulated rates and operate under state regulatory agencies that can approve revenue decoupling policy
- Indicator variable (1 or 0) for each operating company of a traded Company in each quarter, which have weights relative to the average assets value in the year – the Company's Decoupling Index
  - This is based on the individual operating company, not state generic policy
- The Company Decoupling Index each year is the weighted average of the Indicators for the operating companies in that year.

# Empirical Approach Continued

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## Estimation

- Determine the CoC for each Company for each year using the DCF method; looked to both single-stage and multi-stage models
  - Why DCF: stock prices and growth rates are expected to update instantaneous upon adoption of decoupling
- Regress the estimated CoC on the Company Index
  - $R^2$  quite high; .78 for electric utilities, .65 for gas utilities
- Test for statistical significance using one and two sided t-test
  - No statistical significance

# Summary Results

## Study period is 11 years (Q1 2005 – Q4 2016)

- Q1, 2005 the Decoupling Index average at 0% (electric). 25% (gas)
- Q4, 2016 the Decoupling Index average 40% (electric), 62% (gas)

	Gas Utilities	Electric Utilities
Coefficient on Decoupling Index	-0.0012	-0.0026
One-sided t-test (significant if < 0.05)	n/a	0.123
Two-sided t-test (significant if < 0.5)	n/a	0.346

- Results will vary if decoupling is expected to be anticipated by market participants, but it does not change the statistical significance
- Timing of market reaction
  - Tried to move market reaction to 60, 90, 120, 180, 365 days prior to adoption of decoupling
  - For gas utilities identified date of filing for such mechanism
  - We did not find any statistical evidence of impact
- Studies are getting more challenging as there are (i) fewer companies (M&A) and (ii) other regulatory mechanisms that may interact with decoupling

# Discussion

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- Statistical analyses does not show an impact on CoC from decoupling
- It is not clear whether
  - Decoupling is implemented as a response to an elevated risk and therefore brings the utility back to status quo
  - Statistical measures are too blunt to detect any impact
  - The analysis fail to account for confounding factors
- Importantly, if the sample have the same degree of decoupling as the target utility, then any impact would already be included in the CoC estimates
- Impact on the cost of debt?

# Additional Resources

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*Decoupling and the Cost of Capital*, Mike Vilbert and Joe Wharton, The Electricity Journal vol. 28, 2015

*The Impact of Revenue Decoupling on the Cost of Capital for Electric Utilities: An Empirical Investigation*, Michael J. Vilbert, Joseph B. Wharton, Charles Gibbons, Melanie Rosenberg, Yang Wei Neo for The Energy Foundation, March 2014.

*Alternative Regulation and Ratemaking Approaches for Water Companies Supporting the Capital Investment Needs of the 21st Century*, Joe Wharton, Bente Villadsen, and Heidi Bishop, Published by the National Association of Water Companies, October 2013.

*Adjustment Clauses: A state-by-state overview*, Regulatory Research Associates, September 28, 2018.

# Speaker Bio

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Dr. Bente Villadsen is a principal at The Brattle Group's Boston office. She is an expert in regulatory finance with 20 years of experience in the utility regulatory matters. She has experience in electric, gas, pipeline, railroad, and water regulatory matters in both federal and state jurisdictions in the U.S. and abroad. She has testified on cost of capital as well as accounting and credit issues for regulated entities and regulators.

She is the co-author of the text, "Risk and Return for Regulated Industries," and a frequent speaker on cost of capital, regulatory accounting and related matters. She served as the president of SURFA for 2017-18

Much of her recent work has focused on the impact of regulatory initiatives on cash flow, credit metrics and the cost of capital, power and gas risk management, regulatory accounting and prudence issues.

Dr. Villadsen holds a Ph.D. from Yale University's School of Management.