DECOUPLING IN THE US AND ITS IMPACT ON COST OF CAPITAL AND PROFIT

PRESENTED TO

THAI ENERGY REGULATORY COMMISSION, OERC, AND UTILITIES DELEGATION

Boston, Massachusetts

PRESENTED BY

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THE Brattle GROUP

Agenda

- Revenue Decoupling—What is it?
- The Use of Decoupling Mechanisms in the U.S.
- Impact on Cost of Capital, Profit and Credit Metrics
- Conclusions
- Firm Overview

Revenue Decoupling—What is it?

- 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
- In the U.S. different utilities in the same jurisdictions may have different mechanisms

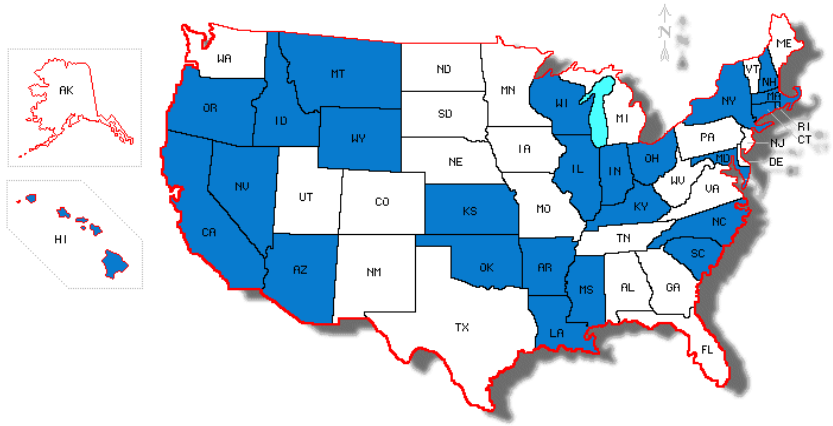
Decoupling—True-Up Revenue

The most common form of decoupling / revenue stabilization

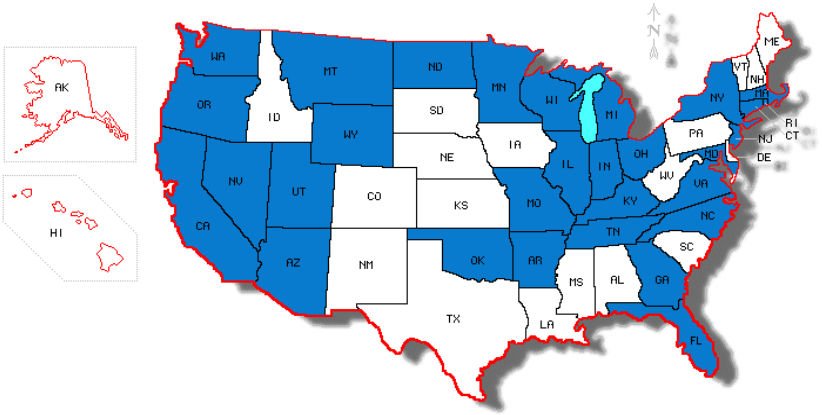
Components:

- 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

Electric Utility Applications (26)



Gas Utility Applications (31)



Decoupling—Lost Fixed Revenue Adjustment

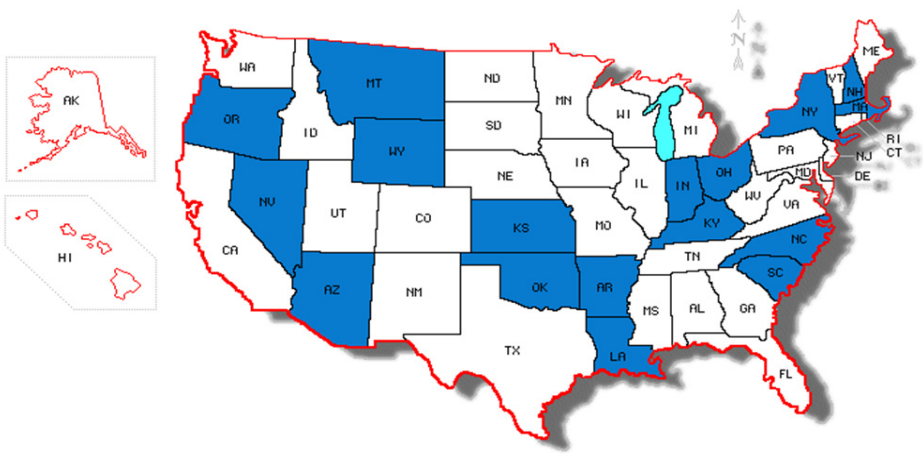
Used fairly widely and often in combination with true-up mechanisms

Construct:

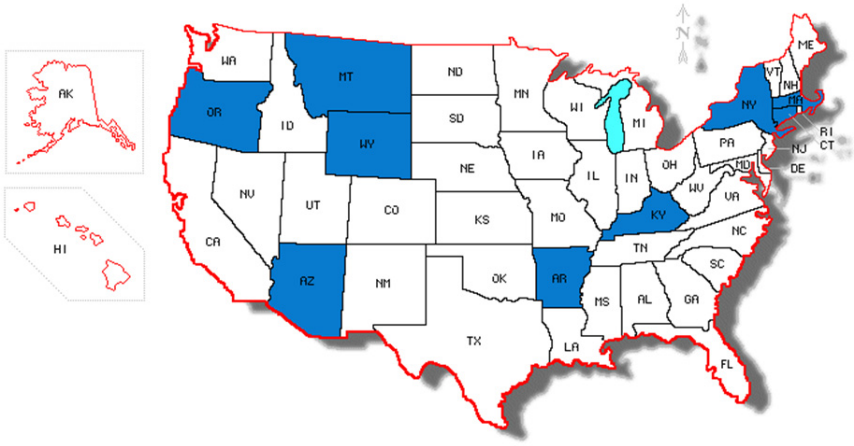
- Focus only on the lost revenue that can be attributed to the utility's conservation / energy efficiency / demand side management programs
- Impact is the actual conservation reduction in kWh times billing rates
- The impact is true-up in a later period

Disputes over conservation vs. weather vs. other impacts

Electric Utility Applications (16)



Gas Utility Applications (9)



Decoupling—Fixed-Variable Rate Design

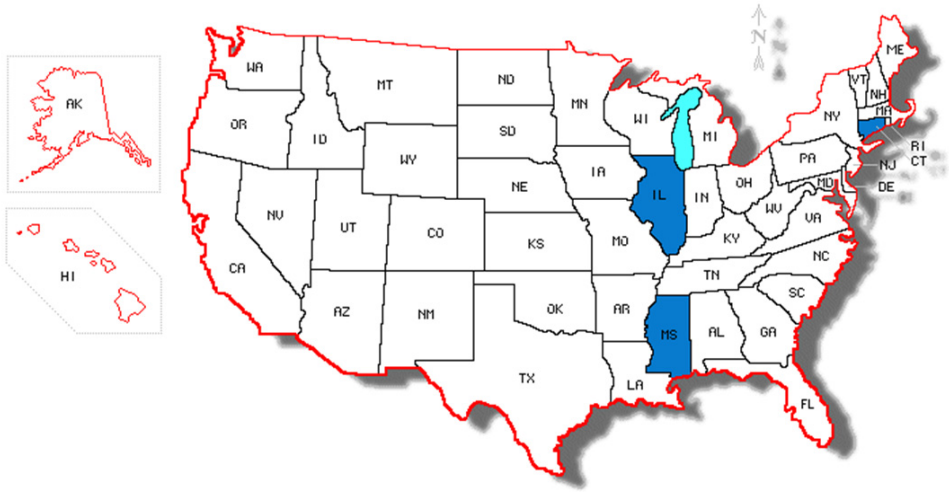
Not widely used and when used the fixed variable design is partial

Construct:

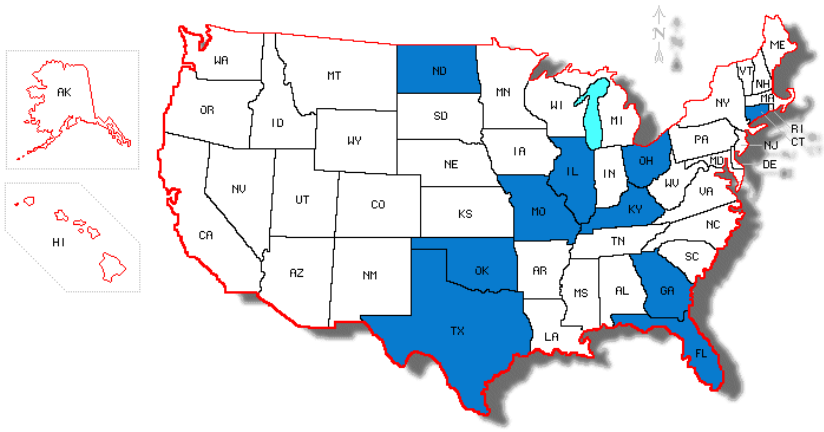
- Fixed costs are recovered through fixed (monthly) charges
- Variable costs are recovered through volumetric charges

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

Electric Utility Applications (3)



Gas Utility Applications (10)



Decoupling—Key Issues

- 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).
- All regulators deciding on decoupling must address the contention that the allowed Return on Equity should be lowered.
  - Reductions up need to be supported by evidence

Impact on Cost of Capital, Profit, and Credit Metrics

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

Decoupling—Regulators Views

- One-fifth of regulatory approvals of revenue decoupling have explicitly reduced the allowed Return on Equity, sometimes with agreement of utility as part of a deal in gaining approval.

Decoupling Decisions and the Reduction in the Allowed Return on Equity

ROE Reduction	No. of Decisions	Shares	No. Resulting from Settlement Agreement
None	56	78%	28
10 basis points	9	13%	4
25 basis points	3	4%	1
50 basis points	4	6%	0
Total	72	100%	33

Source: Pamela Morgan, *A Decade of Decoupling for U.S. Energy Industries* , Dec. 2012

- These regulatory decisions appear to be based on judgment, not on empirical estimates of the effect of decoupling on the Cost of Capital.

Decoupling—Should it Reduce Cost of Equity?

- 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., marked-wide movements such as the financial crisis

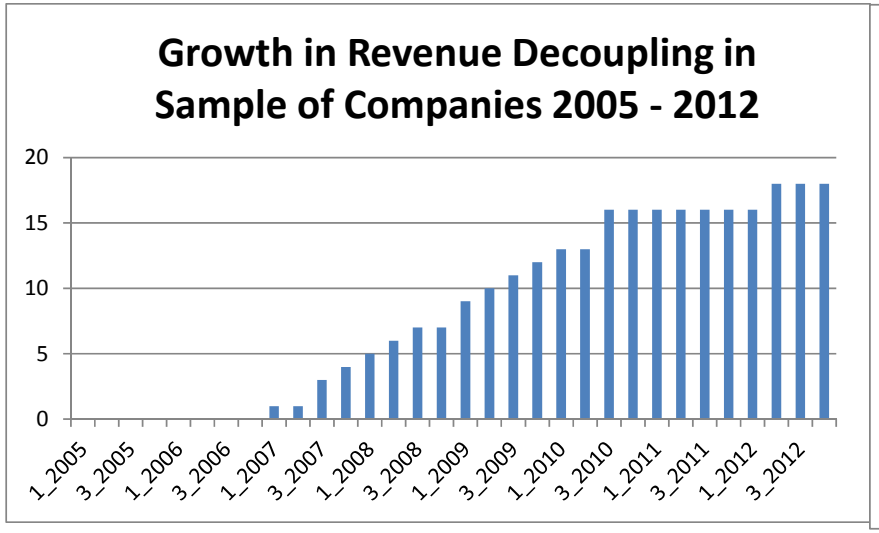
Empirical Analysis of Electric Companies

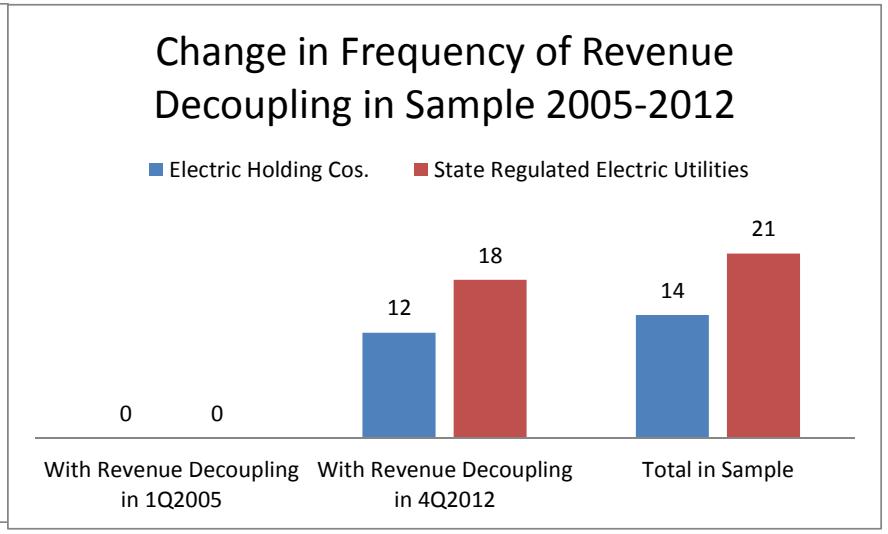
- Electricity sample consists of state-regulated electricity subsidiaries that got decoupling between 2005 and 2012
- The parent of the included utilities are primarily regulated utilities
- The study calculated the Weighted Average Cost of Capital (after-tax) or WACC for the electric companies that were decoupled and for entities that were not decoupled
  - WACC = Cost of Equity × Equity % + Cost of Debt × Debt % × (1 – tax rate)
- Compare
  - The WACC for an entity before and after decoupling
  - The WACC of entities with and without decoupling
  - Because the estimation is based on parent (holding companies), the parent company's degree of decoupling is determined based on the relative size of subsidiaries based on assets

Empirical Analyses of Decoupling for Electricity

Study period is eight years (1 Qtr 2005 – 4 Qtr 2012)

- Good time to study impacts: number of states and electric companies that initiated revenue decoupling mechanisms increased dramatically
- Three states were not in the sample





Measuring the Degree of Decoupling Over Time

Analysis integrates data/information on degree of revenue decoupling, with contemporaneous information on the estimated WACC that financial markets require

- Holding Companies, not their subsidiaries, have stock that is traded on exchanges and for which the WACC can be estimated
- State regulated subsidiaries, not their parent, have regulated rates and operate under state regulatory agencies that can approve revenue decoupling policy
- Indicator variable (1 or 0) for each subsidiary of a holding company in each quarter, which have weights in terms of the average assets value in the year.
- The Holding Company Index each year is weighted average of the Indicators for the subsidiaries in that year.

Statistical Tests Show No WACC Reduction from Decoupling

- If decoupling substantially reduced the WACC, then estimated impacts would be negative.
- The study found no statistically significant impact of decoupling
- Discussion:
  - If decoupling does not reduce the WACC, does that indicated it is not valuable?
    - Removes throughput disincentive for energy efficiency
    - May reduce the cost of debt.
    - Reduces debate/controversy about estimates of future sales volumes
- Not clear whether decoupling follows a situation where risk is higher and reduced to normal by decoupling or if decoupling does not affect systematic risk

Impact of Decoupling on Allowed ROE and Realized Profit

- Some regulators have reduced the allowed ROE when granting decoupling -> lower expected profits
  - Average reduction in Return on Equity less than 5 bps but vary from 0 to 50 basis points
    - No empirical tests of the magnitude of the reduction provided
  - Realized profit is linked to the allowed ROE and the ability to earn the allowed ROE—decoupling increases the ability to earn the allowed ROE (over time)
    - Empirically, the ability to earn the allowed ROE is not linked to decoupling
- Some argue that decoupling was implemented as a response to the utilities facing unique risks regarding the ability to earn the estimated revenue requirement (*e.g.*, California)

Decoupling—Cost of Debt and Credit Rating Agencies View

- Cost of debt depend on total risk – credit rating agencies are focused on the ability to earn the ROE – not the allowed ROE
- Credit agencies view decoupling mechanisms positively
  - Implementation of revenue decoupling mechanisms or partial revenue decoupling revenue mechanisms have been cited in upgrades of electric and gas utilities by Moody's and Standard & Poor's
    - *Moody's notes that over the last five years the predictability and stability of utility cash flows has generally increased as ratemaking mechanisms become more commonplace. These* ***include revenue decoupling*** *and riders to regulatory agreements, which help utilities recover costs faster.* (Moody's Outlook for US Utilities is Stable, 2/25/2014)
- Empirically, there is no difference in the credit rating of entities with decoupling and those without

Summary

- Decoupling mechanisms are fairly widespread in the US with more than half of the states having some form of decoupling for electric utilities
- In Canada Alberta, Ontario and Prince Edwards Island (3 of 10 provinces) have some form of decoupling in place
- There is no empirical evidence that decoupling reduces the cost of capital
  - Brattle investigated electric and natural gas utilities in 2014 and 2011
- Decoupling has been challenged in some jurisdictions (*e.g.*, Michigan)
- Credit rating agencies view decoupling mechanisms favorably
- Decoupling mechanisms are not as prevalent in states with traditional rate making and integrated utilities as in other states

Additional Resources

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.

The Impact of Decoupling on the Cost of Capital: An Empirical Investigation, Joseph Wharton, Michael Vilbert, Richard Goldberg and Toby Brown, The Brattle Group, 2011.

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.

State Electric Efficiency Regulatory Frameworks, Institute of Electric Efficiency, July 2013.

Natural Gas Innovative Rates, Non-Volumetric Rates, and Tracking Mechanisms Current List, Cynthia J. Marple, American Gas Association, Sept. 2012.

Decoupling and 21st Century Rate Making, Moody's Global Credit Research. Nov 03, 2011.

Utility Cost Recovery Mechanisms and Financial Sustainability, Stephen St. Marie, California Public Utilities Commission, Society of Utility Financial Analysts 2011 Annual Forum.

Brief Speaker Bio

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Dr. Bente Villadsen a principal at The Brattle Group's Cambridge office. She is an expert in regulatory finance with more than 14 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. Recently, she co-authored white papers on rate of return methodology and implementation for both industry organizations and regulators; *e.g.*, the Edison Electric Institute, the Australian Pipeline Industry Association, the British Columbia Utilities Board, and the Canadian Transportation Agency.

Much of her recent work has focused on the impact of regulatory initiatives such as decoupling or riders and trackers 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 and joint degree in mathematics and economics (BS & MS) from University of Aarhus in Denmark.

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- Demand Response, Energy Efficiency, and Smart Grid
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