Utility Business Models:
Clean Energy Incentives & Disincentives

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Why Incentives Are Important

- All forms of regulation are incentive regulation
- Utilities can be expected to respond to the incentives they are given
  - Direct relationship to profitability
  - Management pay structure
- If incentives are poorly designed, expect poor results

Utility Financial Structures Enhance Power of Incentives

- Few non-production costs vary with sales
  - So, increased sales increase profits
  - Conversely, decreased sales decrease profits
- High leverage means that utility profits represent a relatively small share of total cost of capital
  - This makes profits highly sensitive to changes in revenues
- The effect may be quite powerful…

Assumptions for Hypothetical Utility: Non-Production Costs

Assumptions	
Operating Expenses	$160,000,000
Rate Base	$200,000,000
Tax Rate	35.00%

Cost of Capital	% of Total	Cost Rate	Weighted Cost Rate		Dollar Amount	
			Nominal	Tax Adjusted	Nominal	Tax Adjusted
Debt	55.00%	8.00%	4.40%	2.86%	$8,800,000	$5,720,000
Equity	45.00%	11.00%	4.95%	7.62%	**$9,900,000**	$15,230,769
Total	100.00%			10.48%		

Revenue Requirement	
Operating Expenses	$160,000,000
Debt	$5,720,000
Equity	$15,230,769
Total	$180,950,769
Allowed Return on Equity	**$9,900,000**

How Changes in Sales Affect Earnings

	Revenue Change		Impact on Earnings		
% Change in Sales	Nominal	Tax Adjusted	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%

Policy Framwork

- "Throughput" incentive is at odds with a requirement to invest in customer-located clean energy:
  - Energy Efficiency
  - Distributed Generation/Self-generation
- Policies should, instead, align utility profit motives with acquisition of these clean resources

Addressing the Incentive Problem

- Revenue erosion:
  - Lost Revenue/Expense Recovery
  - Decoupling utility profits from sales volume
- Positive incentives for meeting efficiency goals:
  - Cost Bonus
  - Shared Savings
  - Cost Capitalization
- Performance goals

Revenue Erosion: Revenue-Sales Decoupling

- Breaks the mathematical link between sales volumes and profits
- Objective is to make profit levels immune to changes in sales volumes
  - This is a revenue issue
  - This is not a pricing issue
  - Volumetric pricing approaches need not be changed
- Does not decouple customers' bills from consumption

The Decoupling Calculation

- Utility Target Revenue Requirement determined with traditional rate case
  - By class & by billing cycle
  - Target revenues may grow over time with customer growth or with an Inflation minus Productivity adjustment
- Each future period *will have* different *actual* unit sales than Test Year
- The difference (positive or negative) is flowed through to customers by adjusting Price for that period

Periodic Decoupling Calculation	
From the Rate Case	
Target Revenues	$10,000,000
Test Year Unit Sales	100,000,000
Price	$0.10/Unit
Post Rate Case Calculation	
Actual Unit Sales	99,000,000
Target Revenues (from above)	$10,000,000
Required Total Price	$0.10101/Unit
Decoupling Price "Adjustment"	$0.00101/Unit

Risks Affected By Decoupling

- Weather
- Economic
- Financial & business risk of utility

Weather Risk

- Weather risk is the risk that revenues change on account of changes in weather
  - Does not apply to the commodity (fuel and purchased power costs)
- If you receive more (or less) revenues or pay less (or more) in customer bills, then you face weather risk
  - Result is a wealth transfer between utility and customers
- Because decoupling holds revenues steady it eliminates weather risk for utility and its customers

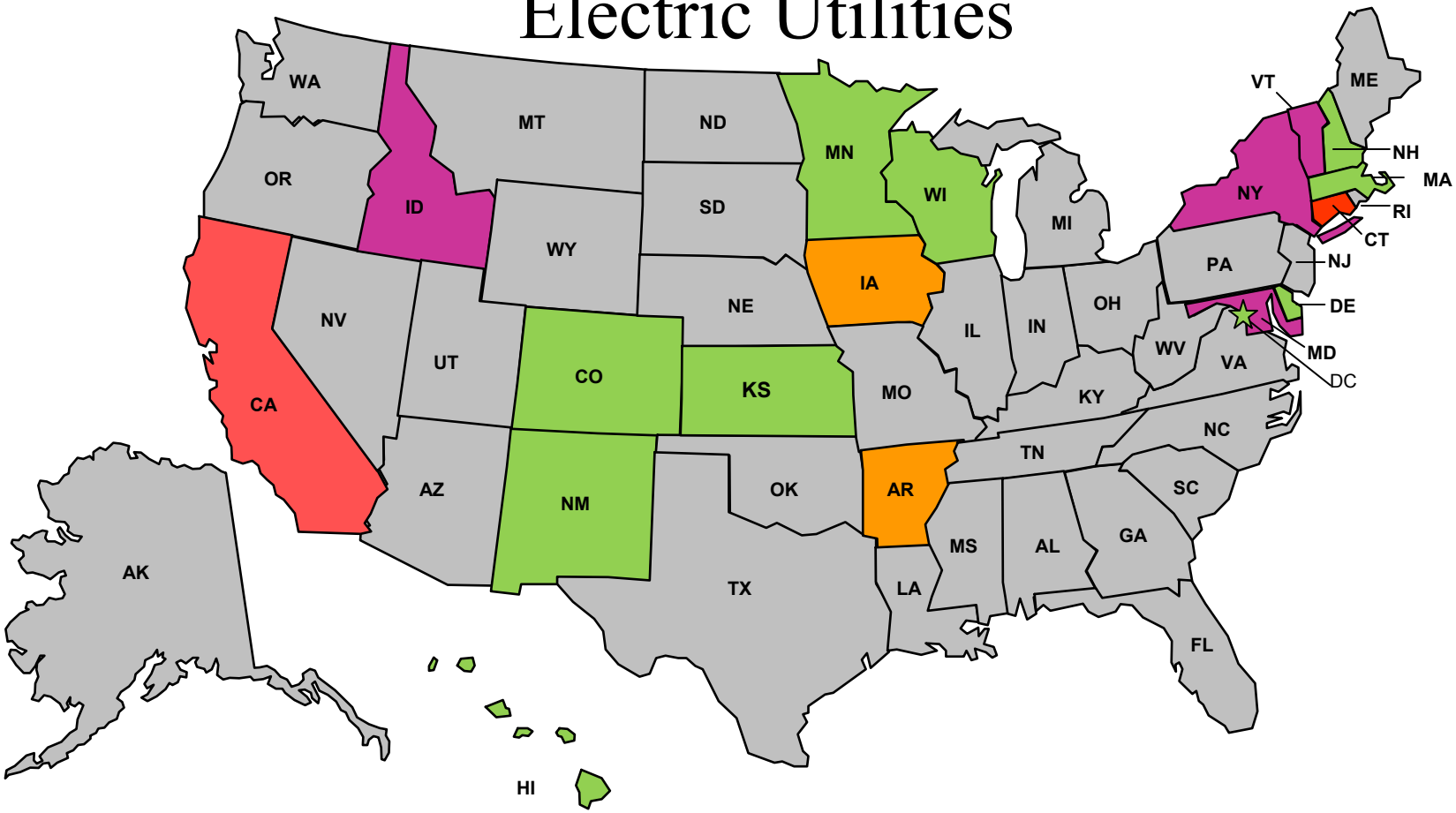
Economic Risk

- Like weather, changes in economic conditions can change sale volume
  - Effect on customer is delayed until next rate case
  - Does not create a wealth transfer like weather
- Decoupling has the effect of eliminating this risk as well because price adjustments are driven by actual sales
- Regulators might consider off-ramps to account for significant changes in economic conditions

Financial & Business Risk

- Because revenues are stabilized with decoupling, risk profile of utility is reduced, so cost of capital is decreased:
  - In the short run, utility can be more highly leveraged
  - In the long run, total return requirements will be lower
- This is an important attribute for financially troubled utilities

Decoupling Status in the US: Electric Utilities



LEGEND

All electric IOUs decoupled or will be (CA, CT)

At least one electric IOU is decoupled (ID, MD, NY, VT)

States considering decoupling (docket or investigation opened, or utility has filed proposal) (CO, DC, DE, HI, KS, MA, MN, NH, NM, WI)

States where commission has indicated it will consider decoupling proposals (AR, IA)

Source: RAP April 16, 2008

Positive Incentives: Cost Bonus Method

- Utility earns bonus computed as a percent of its energy efficiency budget
  - May incentivize over spending
  - Budget may operate as ceiling on energy efficiency
- States that have used this approach have largely moved on to other methods
- Applicable to energy efficiency and DSM

Positive Incentives: Cost Capitalization Method

- Expenditures are included investments (i.e. “rate-based”) and amortized over life of associated energy efficiency investments
- May also include a “bonus” ROR
- Provides a mechanism that is familiar to regulation
- Like other rate base investments, may encourage overspending
- Use of regulatory asset may result in asset discounting by rating agencies
- Applicable to both renewable resources, energy efficiency and DSM

Positive Incentive: Shared Savings Method

- Utility earns incentive based on a share of the economic savings generated by the energy efficiency
  - Provides greater incentives for programs with higher cost benefit ratios
- Savings or production must be measured:
  - Energy Efficiency must be measured and verified
    - Some potential for controversy, but M&V has become standardized under international protocols
- Applicable to energy efficiency and DSM

Positive Incentives: Simple Bonus

- A bonus fund is pre-defined
- When performance goals are met, utility earns bonus
- May use sliding scales
- Applicable to renewable resources, energy efficiency and DSM

Setting Performance Goals

- Incentives should be conditioned on meeting performance goals
- Goals should be achievable but stretch goals
  - Examples:
    - Efficiency goals expressed as reduction in sales
    - Renewable energy as % of energy
    - Reduced carbon emissions in tons/MWH
- Sliding scales can provide partial incentives for reaching most of goals and bonuses for exceeding goals

Thank you for your attention…

Learn more at: http://www.raponline.org

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