

Decoupling Throughput From Profits: The Revenue Per Customer Method

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Aligning Regulatory Incentives with Demand-Side Resources

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What is Revenue Per Customer Decoupling (RPC)?

- RPC is an extension of traditional ratemaking
- RPC begins with a traditional rate case and traditional pricing structures
- However, instead of setting prices and ignoring changing throughput (and profits), RPC sets a target revenue per customer for each class and periodically adjusts prices so that the average revenues per customer for each class remain at the target level
- RPC uses “known” values (billing determinants) and is not subject to significant “judgment” issues – as a result, RPC is less likely to be subject of controversy regarding inputs or calculations



RPC:

What It Does and Doesn't Do

➤ What it does:

- Eliminates incentive to increase profits through increased sales
- Eliminates “losses” from reductions in sales
- Captures effects of all efficiency and DSM activities

➤ What it doesn't do :

- Create (absent some tweaking) a positive incentive for increased efficiency or demand-side resource
- Address “barriers” to efficiency or DSM
- Change the design of rates:
 - RPC does not involve increasing “fixed” charges
 - Maintains (appropriately) volumetric pricing



RPC Math:

Begin With Traditional Rate Case

- Revenue Requirement:
 - Operating expenses, plus
 - Return on investment (ROR x Rate Base), plus
 - Return of investment (Depreciation) equals
 - Revenue Requirement
- Setting Prices:
 - Allocate revenue requirement to each rate class
 - Allocate class revenue requirement to rate components (customer charge, energy and demand)
 - For each rate component:
 - Revenue Requirement ÷ Billing Units = Price



RPC Math:

Calculate the Class Target RPC (TRPC)

- For each rate component ($TRPC_{Rate}$), use Adjusted Test Year data for:
 - Price x Billing Units_{Test Year}^{*} ÷ No. of Customers
= $TRPC_{Rate}$
- Note:
 - This is a “class average” number.
 - This is not a number that each and every customer pays.

*Billing Units for same “period” used for adjustments, e.g. each month of test year



RPC Math:

Compute Periodic Revenue Adjustments

- For Reference Period (*RP*), for each rate component (demand or energy based) to be collected in a future billing period (*BP*):
- Compute Target Revenues (TR) for Rate Component:
 - $TR_{RPC_{Rate}} \times \text{No. of Customers}_{RP} = TR_{RP}$
- Compute Actual (Energy or Demand based) Revenues Collected:
 - $\text{Billing Units}_{RP} \times \text{Base Price} = R_{RP}$
- Compute Revenue Adjustment:
 - $TR_{RP} - R_{RP} = \text{Revenue Adjustment}_{BP}$



RPC Math:

Compute Revenue Adjustment Factor

➤ Compute Rate Rider Price Adjustment:

– Revenue Adjustment_{BP} ÷ Expected
Billing Units_{BP}

➤ Repeat for:

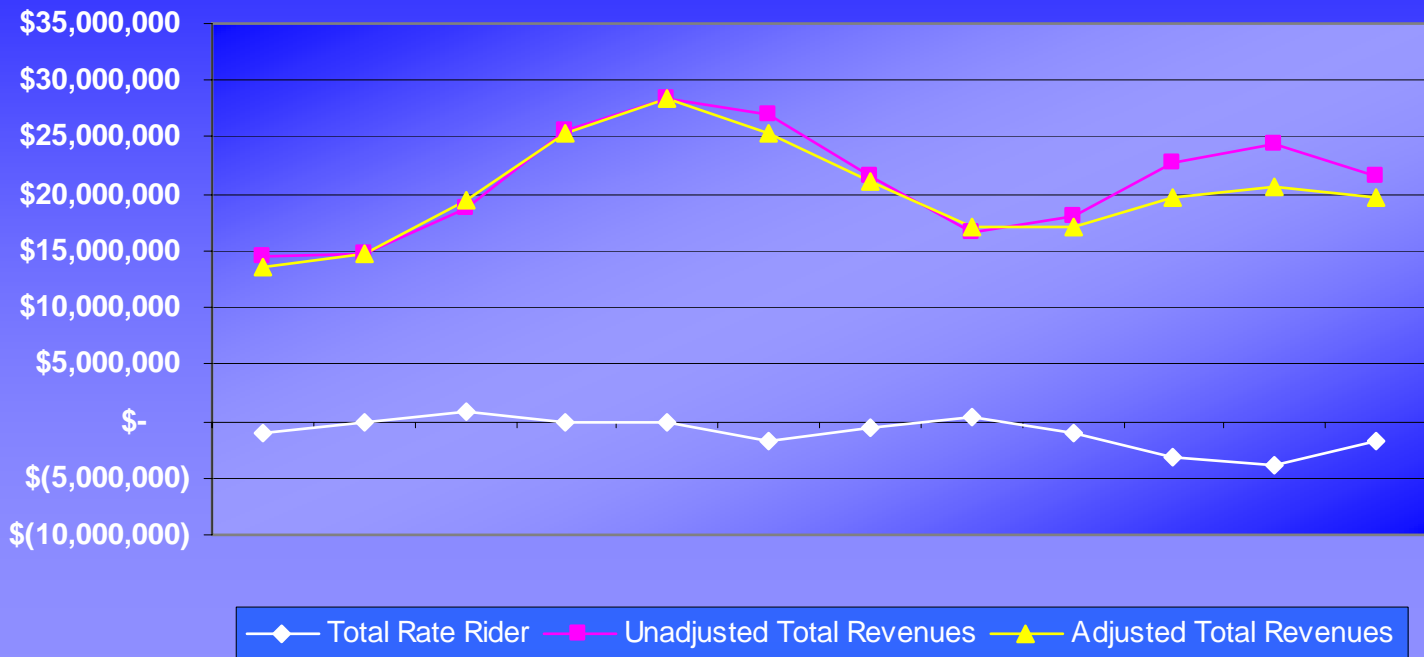
– Each rate component (demand or energy based)

– Each rate class



PP&L Case Study Backcast: What Would Have Happened?

Total Unadjusted and Adjusted Residential Revenues and Monthly Rate Rider Revenues





PP&L Case Study: Time Frame

- October “Reference Month”
- December “Filing Month”
- February “Billing Month”



PP&L Case Study: Residential Energy Charge Target RPC (TRPC) Calculation

Test Year Data For Month of October		
1	Test Year Price	\$0.01644
2	Test Year Billing Units	824,896,488
3	Test Year Energy Revenues (L1 x L2)	\$13,561,110
4	Number of Test Year Customers	1,139,330
5	TRPC _{Energy} (L3 ÷ L4)	\$11.9027

PP&L Case Study:



Residential Energy-based Charge Computation of Revenue Adjustment

Reference Period Data For Month of October		
1	Test Year Price	\$0.01644
2	Reference Period Billing Units	880,313,022
3	Reference Period Revenues (L1 x L2)	\$14,472,145
4	No. of Reference Period Customers	1,165,022
5	Target Revenue Per Customer	\$11.9027
6	Allowed Revenues (L4 x L5)	\$13,745,627
7	Revenue Adjustment (L6 - L3)	\$(726,518)



PP&L Case Study: Residential Energy-based Charge Computation of Adjustment Factor

1	Required Revenue Adjustment	\$(726,518)
2	Expected February Billing Units	1,465,616,561
3	Adjustment Factor* (L1 x L2)	\$(0.000496)

*This is the amount by which the rate case price is adjusted up or down.



Use Per Customer Trends: An Important Factor to Consider

- Average Use Per Customer is not a constant
 - Is already going up or down over time
- Changes in types of end-uses change:
 - More efficient appliances, but
 - More appliances and
 - More energy intensive appliances
- Changes in types of new customer facilities change usage patterns
 - Energy efficient building codes
 - New appliances tend to be more efficient than old appliances
 - Types of building being built or converted can be radically different from average “old” customers



Use Per Customer Trends: How It Impacts Utility

- If going down
 - Utility is on declining profit path between rate cases
 - If you do nothing else, RPC acts as an attrition (some might say “windfall”) mechanism
- If going up:
 - Utility is on an increasing profit path between rate cases
 - If you do nothing else, RPC reduces profitability path



What to do?: “K” Factor To The Rescue

- K Factor is a variable used to address changing revenue per customer issues
 - Can be used to eliminate shortfalls or windfalls occasioned by use of RPC
 - Can also be used to “push” efficiency targets
- K Factor is a variable used to impose a “slope” on an otherwise flat RPC curve and allows the RPC to go up or down over time, depending on policy objectives
- K Factor is like having a fine tuning knob for rates



RPC Adds New Policy Tools With Choices to Make

- Should RPC be “profit neutral”?
- Should RPC be tweaked to impose more aggressive energy efficiency?
- How often should RPC adjustments be made?
- Should RPC be combined with PBR or other incentive mechanisms?



Thank You For Your Attention

- More Resources:
 - MADRI Website:
 - <http://www.energetics.com/madri>
 - PDF Versions of all documents, meeting schedules, etc.
 - MADRI Weblog:
 - <http://www.raonline.org/madri>
 - Excel and Word versions of selected working documents
 - See specifically:
 - MADRI Model Revenue Stability Rate Rider
 - PPL Case Study (Excel Spreadsheet)
- RAP Website: <http://www.raonline.org>
- E-mail: rapwayne@aol.com