



Telecommunications • Litigation • Finance • Environment • Energy

The Brattle Group

**Rate Shock Mitigation
NARUC Summer Conference
San Francisco, CA**

July 29, 2006

Prepared by *The Brattle Group*
Frank.Graves@Brattle.com
Philip.Hanser@Brattle.com

Agenda

- Breadth and underlying causes of the problem
- Zero-NPV Mitigation
- Preventing future shocks

Breadth and Causes of Problem

- Underlying cost increases since 1/2000
 - ▶ Natural gas and spot coal both up ~100%
 - ▶ RTO costs for congestion, ancillaries, and market development
- Expiration of retail restructuring rate freezes (good news/bad news: we are having this problem now because we did not have it earlier)
- Some utilities financially constrained: 20% at credit rating below investment grade
- Future upward rate pressures due to needed infrastructure refurbishment and expansion, plus likely environmental costs.

Zero-NPV Mitigation

There is no “silver bullet” where the problem already has arisen.

- Best can do is zero-NPV repackaging of cost-recovery mechanisms
- However, this can result in lower rates, even over the long run

Possible repackagings:

- Classic deferral – phased-in rate increases, carrying charges on regulatory asset, amortization later
- Capital recovery levelization/financing – sale and leaseback in large ratebase items, Trended Original Cost ratemaking
- Risk transfers to customers, e.g. AACs, CWIP

Deferral Themes and Variations

- For deferral to be value-neutral, rather than expropriation, deferred amounts must be:
 - ▶ A credible regulatory asset account
 - ▶ Earning a fair carrying charge
 - ▶ Assured of being fully amortized
- Carrying cost on deferred amounts can be lower, the more secure their recovery

Capital Recovery Financing

- Typical cost of service pricing creates “front-end loading” for large capital (ratebase) items
 - ▶ $(r \times \text{Net Book Value}) + \text{Straight line depreciation}$
- Through sale-and-leaseback, carrying charges become more flat over lease life,
 - ▶ $(\text{lower } r + \text{deferred amortization}) \times \text{Gross Book Value}$
 - ▶ Rates are lower, but PV is the same
 - Lower costs at lower discount rate = same PV
 - ▶ Lease payments must be highly assured (low risk to lessor)

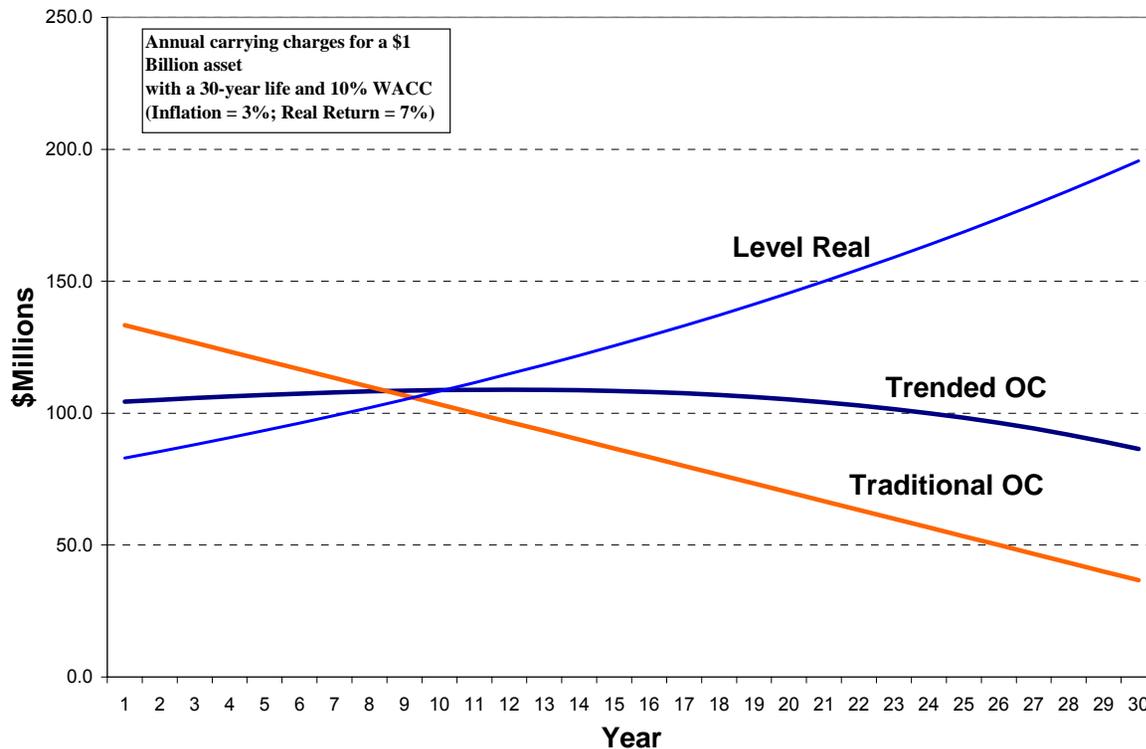
Capital Recovery Rescheduling – TOC

- Front-end loading may be inefficient and inequitable under some circumstances
 - ▶ In competitive markets, assets more typically grow in value with inflation, less obsolescence; economic depreciation generally back-end loaded
 - ▶ More like “replacement cost-new” appraisals
 - ▶ E.g., transmission assets probably worth much more today than when built, but cost-of-service rates may be much less
- Trended Original Cost (TOC) ratemaking can be used to rectify this, consistent with cost-of-service principles
 - ▶ Ratebase grows at inflation, less depreciation over remaining life
 - ▶ Return on ratebase excludes inflation
 - ▶ $PV(\text{net cash flows at WACC}) = \text{original cost}$
 - ▶ Used by Trans Alaska Pipeline for a portion of value

TOC vs. Conventional Ratemaking

There are many economically equivalent ways to recover costs, by varying how amortization and returns are scheduled.

Comparison of Annual Capital Recovery
under three cost-based methods



Risk Transfers

Regulation, more so than the intrinsic operating risk of the underlying assets, determines the riskiness of utility equity (hence cost of capital):

- Total business risk is split between customers and shareholders; if not given to customers, then shareholders need a high CoC (and conversely)
- Risk allocated through price structure (fixed costs in variable charges), deferrals, estimated costs vs. actuals, unstable or inefficient subsidies, etc.
- More reliable, rapid matching of revenues to costs reduces investor risk; customer rates go down but customer risk goes up

Preventing Future Shocks

Given the volatility of the market outlook, and the need for expanded utility infrastructure, rate shock problems may recur.

Some preventive steps are feasible:

- Asset selection – scale, type, timing
- Energy efficiency – defer/avoid need
- Avoid transition-creating prices
 - ▶ Automatic adjustment clauses
 - ▶ CWIP in ratebase
 - ▶ Staggered procurements
 - ▶ Safety valves force majeure clauses for rate caps during rate freezes

Prevention – Asset Selection

- All utilities and their commissions strive to find least-cost plans, but these may still result in severe rate shock:
 - ▶ E.g. if chosen assets have low PVRRs because of very distant cost advantages
 - ▶ Or if asset advantages are heavily dependent on a few key scenarios occurring
- Smaller assets may have NPV advantages not captured in typical PVRR analysis, due to value of flexibility (optionality)
- High long-run uncertainty may also justify:
 - ▶ Shorter evaluation period
 - ▶ Bigger payback from front-end loaded assets
 - ▶ Technological obsolescence penalty
- Diversification is not necessarily helpful to rate shock

Prevention – Energy Efficiency

- A big driver of potential future rate increases is CO₂ policy
 - ▶ A \$10/ton CO₂ penalty raises an efficient baseload coal plant's operating costs by roughly \$10/MWh, a gas CC by \$4/MWh
 - ▶ A broad CO₂ tax will raise costs of service and wholesale market prices significantly – as is desired, in order to discourage fossil fuel usage and attract non-carbon technologies and energy efficiency
- Energy efficiency may be the best possible response – cost-effective, some low-hanging fruit, saves money and carbon

Avoiding Transition – Creating Policies

If utility rates and revenues stay fairly closely in phase with costs, the potential need for large, abrupt adjustments (rate shocks) goes down.

- Same total costs involved
- Customers may be more tolerant of predictable, gradual increases than of abrupt, large adjustments after years of cost protection
- Gradual increases may be more efficient and equitable: costs borne by those who benefited
- Mechanisms include automatic adjustment clauses (AACs) allowing CWIP in ratebase, PBR/incentive ratemaking

Conclusions

Rate shock is an easier problem to prevent than to cure (though not fully preventable).

Solutions should be value-neutral (0 NPV), but still can yield reduced rates

- In the short run: deferrals
- Or the long run: if risks to investors reduced

Some solutions may be more efficient and equitable than status quo

- Back-end loading
- Effective and broad AACs