

Resetting FERC ROE Policy: A Window of Opportunity

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FERC's ROE Policy is up for a Revamp

FERC is still formulating response to remand and vacatur of Opinion No. 531

- Stakeholder concerns both short and long term:
 - Default policies pending action
 - Current market conditions
 - “Model risk” in longer term
 - Pipelines as well as transmission
- To date, debate has remained mostly technical and narrow:
 - Anomalous market conditions
 - Benchmarking
 - Methodology refinements

The time is ripe to recognize more types of industry drivers and resulting risks

- New mandates for investment:
 - System resiliency
 - Economic efficiency
 - Remote renewables
 - Changing supply mix
 - Distributed energy resources
- Heightened risks:
 - Conventional risks amplified
 - New risks emerge:
 - Heterogeneity of demand
 - Volatility in utilization
 - Shrinking base for cost allocation
- Plus... the asymmetry of regulated risk

➡ **Transmission projects and companies are more diverse than in the past.**

A more tailored approach to risk is needed, as well as a broader menu of cost of capital estimation techniques.

In the Meantime, Diverging Stakeholder Claims

Pending policy guidance, stakeholder claims have diverged significantly.

Martha Coakley, Massachusetts Attorney General, et al. v. Bangor Hydro-Electric Company, et al. Docket No. EL11-66-001			Belmont Municipal Light Department, et al. v. Central Maine Power Company, et al. Docket No. EL16-64-000		
2006 Opinion 489 11.14%	Difference -1.48%	2013 Trial Staff 9.66%	2014 Opinion 531 10.57%	Difference -2.85%	2017 Trial Staff* 7.72%

* Later amended upward for adjustments to proxy group outliers.

Disagreements have centered on:

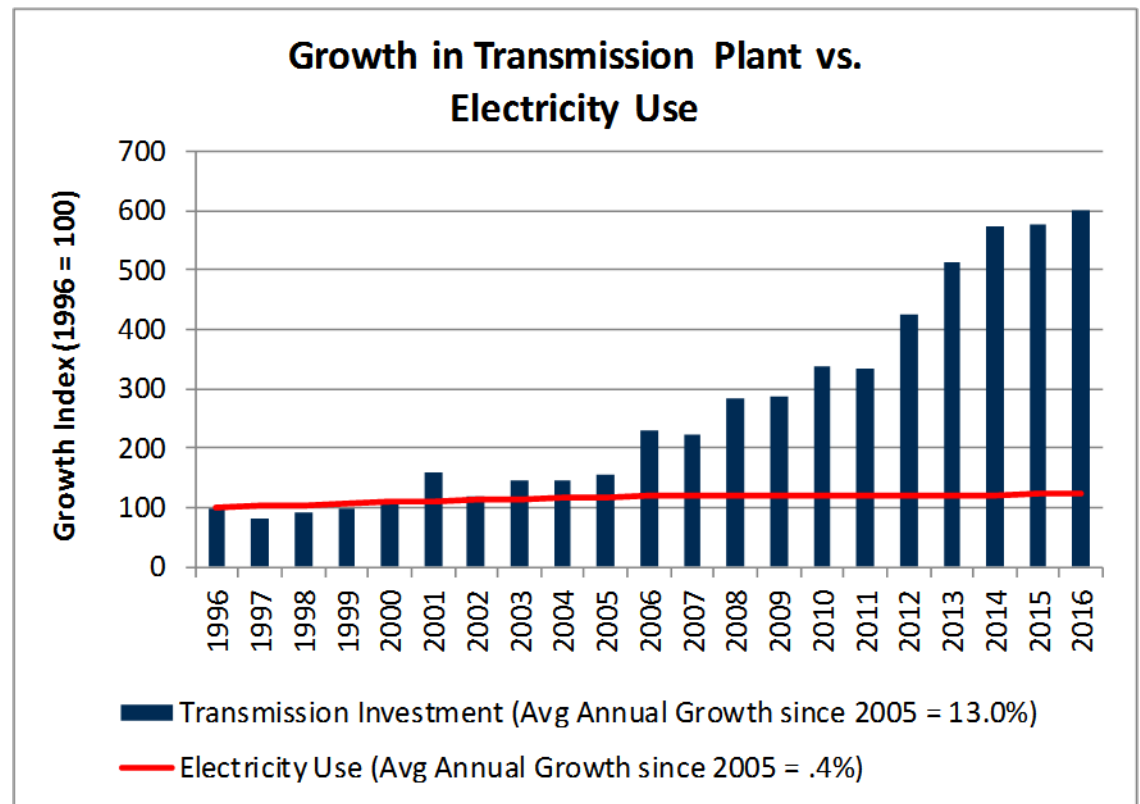
- Defining “existing ROE”
 - Based on vacatur, TOs have argued for pre-531 base ROE of 11.14%
 - Commission rejected in October 2017
- Model risk and “anomalous market conditions”
 - Opinion 531 acknowledged: “the risk that a theoretical model...fails to predict or represent the real phenomenon that is being modeled.”
 - TOs claim anomalous conditions, with interest rates well below history averages.
 - Intervenor claim “new normal,” with recommended ROEs as low as 7.72%.

 **FERC ALJ recently declined to scuttle 531 method. But do these disputes miss larger points?**

Fundamental Shifts in Transmission Business

Growth in transmission plant is increasingly outstripping growth in electricity demand.

- A four-fold increase in gross transmission plant since 2005
 - Roughly \$20 billion in 2016
 - Excludes CWIP
- Electricity use (kWh) has grown by only 0.4% p.a.
- Transmission projects serve diverse needs unrelated to load growth



Sources: U.S. Energy Information Administration—Today In Energy, February 9, 2018
U.S. Energy Information Administration—Annual Energy Outlook 2018

Fundamental Shifts in Transmission Business

Unlike in the past, transmission investments are increasingly driven by diverse needs unrelated to load growth.

1. System reliability, flexibility, and resiliency

- Greater frequency of extreme weather events
- Insurance-like, and may not be needed
- But likely unavoidable for prudence

2. Congestion relief and economic efficiency

- Has received lower priority in the past
- Now pent-up demand for more transmission
RTOs are seeking competitive procurement

3. Accessing remote renewable resources

- Climate goals and lower costs spur wind build
- Locations are remote to capture wind resource
- Wind “generation pockets” need grid connects

4. Shifts in supply mix and retirements

- Gas generation has been replacing coal
- New gas pipelines needed to access new supply
- New transmission serves both plants and supply

5. Integrating distributed energy

- DER penetration will ramp up in many areas
- Reinforced by battery and storage capabilities
- Need for complex, two-way transmission services

Risks are increasing ...

New investment drivers amplify old risks:

- More capital (especially for development)
- Longer investment horizons
- More permitting and regulatory risk
- More competitive bidding
- Demands for blanket “cost caps”

**➡ Per Opinion 531, FERC already recognizes many of these
(but emerging risks have not yet been addressed)**

...but also changing

New transmission project rationales, impacts, and risks are more heterogeneous:

Drivers	Region Specific	Qualitatively Diverse
1. <i>Resiliency</i>	– Natural disaster <i>zones</i>	– Natural disaster <i>types</i>
2. <i>Economic efficiency</i>	– Congestion bottlenecks	– Collapsed premiums
3. <i>Accessing renewables</i>	– Remote clean energy	– Integration requirements
4. <i>Supply mix</i>	– Gas vs. Coal	– Changing flow patterns
5. <i>Distributed energy</i>	– High insolation regions	– Two-way service, reduced load

With Long-Run Implications for Cost Recovery

Net effects of the new circumstances:

- More costs unrelated to load growth
- More diverse economic circumstances in which intended transmission benefits have to be achieved and costs have to be recovered
- More room for stakeholder conflict (*ex-post*)

Plus a risky, and possibly shrinking base for cost allocation:

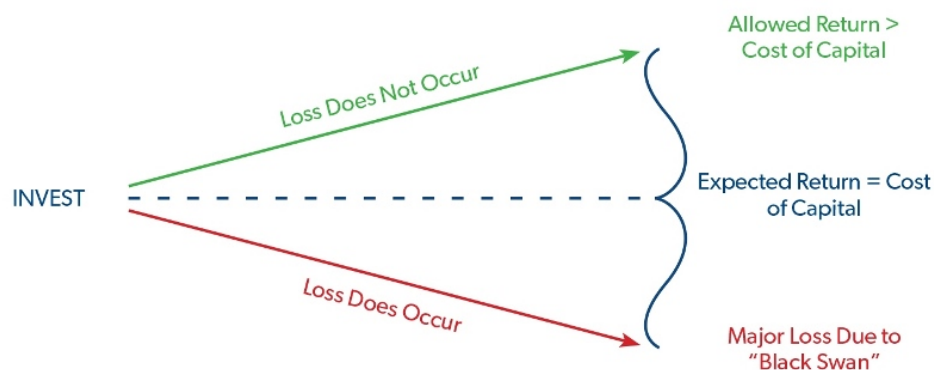
- Low load growth
- Increased complexity, shifting patterns from DERs and EE
- Increased customer flexibility to avoid transmission tariffs
 - Rooftop PV to reduce shares of system energy
 - Controllable self-gen, storage, or DR avoids shares of coincident peak demand
 - Retail supply of ancillary services back to (rather than from) wholesale grid

 **Can tomorrow's transmission owners reliably allocate and recover growing and increasingly contestable costs?**

Some Emerging Risks are Asymmetric

Cost of capital methods do not compensate asymmetric risk:

- Asymmetric risk can be analogized to corporate bonds -- little or no upside, but potentially unbounded downside (akin to default)
 - 1980s – Deregulation of natural gas prices
 - 1990s – Deregulation of generation
 - 2000s – California Energy Crisis
 - 2010s – Fracking strands gas hedges
 - 2020s and beyond – Emergence and incentivization of DERs



Conclusion: If allowed return is greater than cost of capital, expected return on rate base can equal the cost of capital even with a risk of major loss. Allowed Return = cost of capital + asymmetry risk premium can compensate investors for the risk of major losses due to "black swans."

- Bond yield-to-maturity must exceed statistically expected return
- However, utility cost of capital methods attempt to measure only statistically expected return (and rates are set for normal conditions)
- *Allowed ROEs based on expected return do not compensate utilities for asymmetric risk*

ROE Implications

Cost of capital estimations and risk positioning at FERC will require a richer menu of tools and practices.

Some are already being debated, but confined to improving accuracy:

- Wider suite of estimation methodologies and models
- Adoption of more diverse proxy groups
- Including/excluding deemed outliers
- Other modeled fundamentals such as long-term growth assumptions

They must also be better mapped to varied market circumstances:

- Differentiated and weighted by company context/market conditions
- Acknowledge heterogeneity of “business risk”
- Criteria may vary by business risk
- Not uniformly applicable, so alternatives need to be considered

➡ Remand of FERC ROE method should form a springboard for fundamental risk reassessment, beyond just refining cost of capital techniques.

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