



Slippery Slopes and Spider Webs

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THE PROBLEM

A SLIPPERY SLOPE



LEADS TO

A TANGLED WEB



Basic Issues

- When should markets be allowed to work without regulatory interference?
 - When can markets be allowed to work without regulatory interference?
- { Transmission
Generation
Market power mitigation

A Southeastern Perspective



Transmission

Some Definitions

- Reliability enhancements are those required to meet applicable reliability standards
- Economic enhancements are optional and may be to:
 - get recognition as a deliverable network resource
 - reduce congestion (to save or make money)
 - acquire new transmission service
 - interconnect new generation
 - increase transfer capability
 - acquire FTRs

Transmission (*cont.*)

- What happens if reliability investments are not made? (Bad things)
- Is (bulk) transmission reliability a “public good”? (Yes)
- Are economic transmission investments different? Are they a “public good”? (No)
- Can we leave one to market forces but not the other? (Yes)

Transmission (*cont.*)

- If centralized decisions are made for economic transmission upgrades:
 - in LMP environments, price signals for generator location (and transmission use) may be ignored – potentially increasing congestion and overall costs
 - arguments about who pays will result in regulatory gridlock (the tangled web)
 - benefits of investments will not necessarily go to investors (or payers)
 - if “market failures” result in someone else paying costs, then there will be incentives to fail (the slippery slope)

Transmission (*cont.*)

- merchants will not make investments if the economic benefits of their investments can be wiped out by centralized decisions
- there will be no market test to determine if congestion should be relieved (not all congestion is economic to relieve)
- discourages distributed generation or other alternatives to transmission
- Thus, we should rely on market solutions. But can we?

Transmission (*cont.*)

- Common arguments against reliance on market for funding new transmission:
 - Awarding FTRs is insufficient because they become less valuable after investments
 - we can't separate economic and reliability investments
 - transmission investments benefit all customers, now or in the future
 - projects may have overall benefits, but benefits to any one party are insufficient to incent investment



Transmission (*cont.*)

- projects may delay or negate the need for a future reliability investment
- transmission investment is lumpy – the size of the project will never fit the need
- transmission is cheap relative to the overall price of electricity – thus, we should build (and socialize the costs of) a “superhighway” to save on generation costs

Transmission (*cont.*)

- Awarding FTRs is insufficient because they become less valuable after investments
 - for most investments, it is not the FTRs themselves that are valuable -- it's the ability to become a network resource, the ability to get lower delivered energy prices, or the ability to get new firm service
 - if these benefits aren't sufficient to incent investment, it's quite possible that the project is simply not economic

Transmission (*cont.*)

- We can't separate economic and reliability investments
 - it's the wrong question – almost all transmission improvements have both reliability and economic benefits
 - the right question - is the project required?
 - if the project is required, but also has economic benefits, then any economic benefits created by the project should be retained by those who pay the costs
 - if the project is not required, but does have reliability benefits, then the question should be – are those reliability benefits needed by anyone else?
 - ❖ if answer is yes, then costs and benefits should be allocated to those who need the reliability improvement
 - ❖ if answer is no, then other market participants should not have to pay

Transmission (*cont.*)

- Transmission investments benefit all customers, now or in the future
 - this is a true statement, but again, should customers (or other market participants) be required to pay for benefits they don't need?
 - this statement is also true for generation – should we charge all customers for every new generator that gets built?



Transmission (*cont.*)

- Projects may have overall benefits, but benefits to any one party are insufficient to incent investment
 - provides merchant opportunity
 - parties can jointly fund projects
 - RTO or planning entity can identify such projects and associated benefits and publicize
 - RSCs could play a big role in encouraging investment

Transmission (*cont.*)

- Projects may delay or negate the need for a future reliability investment
 - where cost savings are real, then only the difference in costs between the new project and the previously planned project need be funded by market participant
 - by the same token, if an economic project speeds up or adds the need for a reliability project, then the additional costs should be paid by market participant

Transmission (*cont.*)

- Transmission investment is lumpy – the size of the project will never fit the need
 - does that mean that someone else needs to subsidize the excess capacity, even if they don't benefit?
 - if the project has long-term benefits, entity funding the project should get long-term rights to the capacity created – making it a good long-term investment

Transmission (*cont.*)

- Transmission is cheap relative to the overall price of electricity – thus, we should build (and socialize the costs of) a “superhighway” to save on generation costs
 - transmission is cheap only on an average (embedded cost) basis – the costs of transmission associated with an incremental generation project can sometimes outweigh generation costs
 - it is twice as expensive (and less reliable) to build plants near fuel and transmit electricity as it is to build plants near load and transport gas (on incremental basis)
 - socializing transmission costs create inefficient competition

Transmission (*cont.*)

- Caveats
 - decisions must be non-discriminatory
 - if there are truly market failures, then the cause of the market failure needs to be examined and corrected if possible
 - other alternatives should be examined before ordering transmission to be built
 - allocating costs and benefits appropriately is crucial in any event – transmission will not get built

Generation

- First question – should we rely on market?
 - are generation adequacy (including planning and operating reserve) requirements different than transmission reliability requirements? (Yes)
 - is generation adequacy a public good? (No, but operating reserves and other ancillary services may be an exception)
 - Will combination of price and demand response ensure balance of supply and demand? (Yes)
- If answer is that we should rely on markets, then -

Generation (*cont.*)

- Can we rely on markets?
- For markets to work (effectively), market design must be right from the start and market participants must face true costs of their decisions
 - practical constraints
 - operational realities
 - political realities

Generation (*cont.*)

- Practical constraints
 - In order to rely on market, you must be able to prevent leaning – i.e., all load-serving entities (and/or customers) must be responsible for their own decisions
 - In the case of Southern Company, there are hundreds of distribution utilities embedded within our control area – we usually only know after the fact if they had sufficient generation to meet their load
 - Numerous retail customers of other utilities are served off of our transmission or distribution wires (and vice versa)
 - Difficult (and hugely expensive) to meter in real time, catch leaning in real time, or to cut off some customers and not others on the same circuit

Generation (*cont.*)

- Practical constraints (*cont.*)
 - penalizing customers with high prices or after the fact may or may not be a strong enough incentive (it may be cheaper to pay high prices or penalties than to carry sufficient reserves)
 - relying on after the fact solutions will result in complicated disputes and litigation – void will probably be filled with regulatory solutions
 - RTP/demand response is essential – but voluntary participation won't work

Generation (*cont.*)

- Operational realities
 - when system constraints arise, TLRs must be called where they relieve the constraint – the entity relieving the constraint is usually not the entity causing the constraint
 - there is usually not enough time to look for alternative solutions
 - operating reserves and other ancillary services are even more problematic – they must be available when and where needed

Generation (*cont.*)

- Operational realities (*cont.*)
 - loop flows complicate things even further – party with sufficient generation may not be able to get to that generation because of externally caused constraints
 - again, this suggests that reliance on market solutions will be difficult

Generation (*cont.*)

- Political realities
- A simple mathematical example
 - on Southern Company's system, a CT peaking runs about 5% of the hours in a typical year
 - assume \$6 gas, 12,000 heat rate, and about \$60 per kw/year in capital costs
 - if operating in a market, this plant would need revenues of \$2.25 for every kwh generated just to break even

Generation (*cont.*)

- Political realities (*cont.*)
 - for average residential customer, annual bill would increase from about \$1,000 per year to \$2,500 per year, just from the increased costs in those peak hours
 - of course, demand response would dampen some of that effect, but how much?
 - are regulators willing to let prices go that high (or mandate RTP deployment)

Generation (*cont.*)

- Political realities (*cont.*)
 - if prices don't go that high, who will invest in peakers?
 - what about fuel diversity? What is impact of electric consumption of natural gas on market prices for gas? It is a critically important issue in the Southeast
 - the economic and social costs of generation inadequacy must be factored in



Generation (*cont.*)

“War is too important to be left
to the generals -

Electricity is too important to be
left to the technicians”

(Chair Michael Dworkin, VT)



Generation (*cont.*)

- Intervention probably should, can, and will intrude
- We need to define how intervention should occur with the least possible damage to markets

Generation (*cont.*)

- Some principles:
 - effective competition requires price signals that lead to efficient decisions
 - solution must be compatible with practical, operational and political realities
 - managed competition is an oxymoron
 - must be applicable to RTO participants and non-participants (especially in absence of reciprocal agreements)
 - must be measurable and enforceable
 - KISS
 - must have a four letter acronym



Generation (*cont.*)

- We've tried a bunch of “market oriented” things
- Success has been mixed – problems with each method
- Why not the tried and true?

YMHR

Generation (*cont.*)

- YMHR – You Must Have Reserves
- Each load-serving entity would simply be responsible for meeting a required reserve margin for its own customer base
- Customers procuring their own generation (not through an LSE) would either have to demonstrate sufficient reserves or ability to be disconnected remotely



Generation (*cont.*)

- Reserve margin could be set by:
 - RTO
 - RSC
 - states
 - NERC standard
- Non-jurisdictional utilities would have to volunteer



Generation (*cont.*)

- Reserve margin can and should be regionally variable or even variable within a region if justified by system topography (but must be non-discriminatory)
- Reserve margins or requirements should be set for planning reserves, operating reserves and perhaps other ancillary services

Generation (*cont.*)

- Once set, there should be flexibility in meeting the requirement
 - demand resources (if real and practical)
 - bilateral contracts
 - voluntary purchases from voluntary capacity markets
 - owned generation
- Time frames must be established
- Must be tradable where customer base isn't defined
- Verification will be needed (The Cop)



Generation (*cont.*)

- YMHR, of course, has its own defects – works best in non retail choice environments
- Finding the right balance is difficult
- Technology might solve the problem (storage, microturbines, etc.)

Market Power

- Clearly, where (and when) a supplier has market power, it should not be permitted to sell at rates which it determines itself
- In such cases, there can and should be regulatory intervention
- A few cautions –
 - definitions are important
 - ❖ scarcity vs. market power
 - ❖ efficiency vs. market share
 - metrics for making determinations are important

Market Power (*cont.*)

- Here, the form of regulatory intervention (i.e., market power mitigation) is even more important
- Mitigating market power by requiring embedded cost-based rates may throw the baby out with the bath water
 - market power is only a real concern when market prices are above costs – mitigating some suppliers to embedded cost harms competition
 - a supplier likely can still sell in other markets where it does not have market power, reducing supply (and raising prices) locally

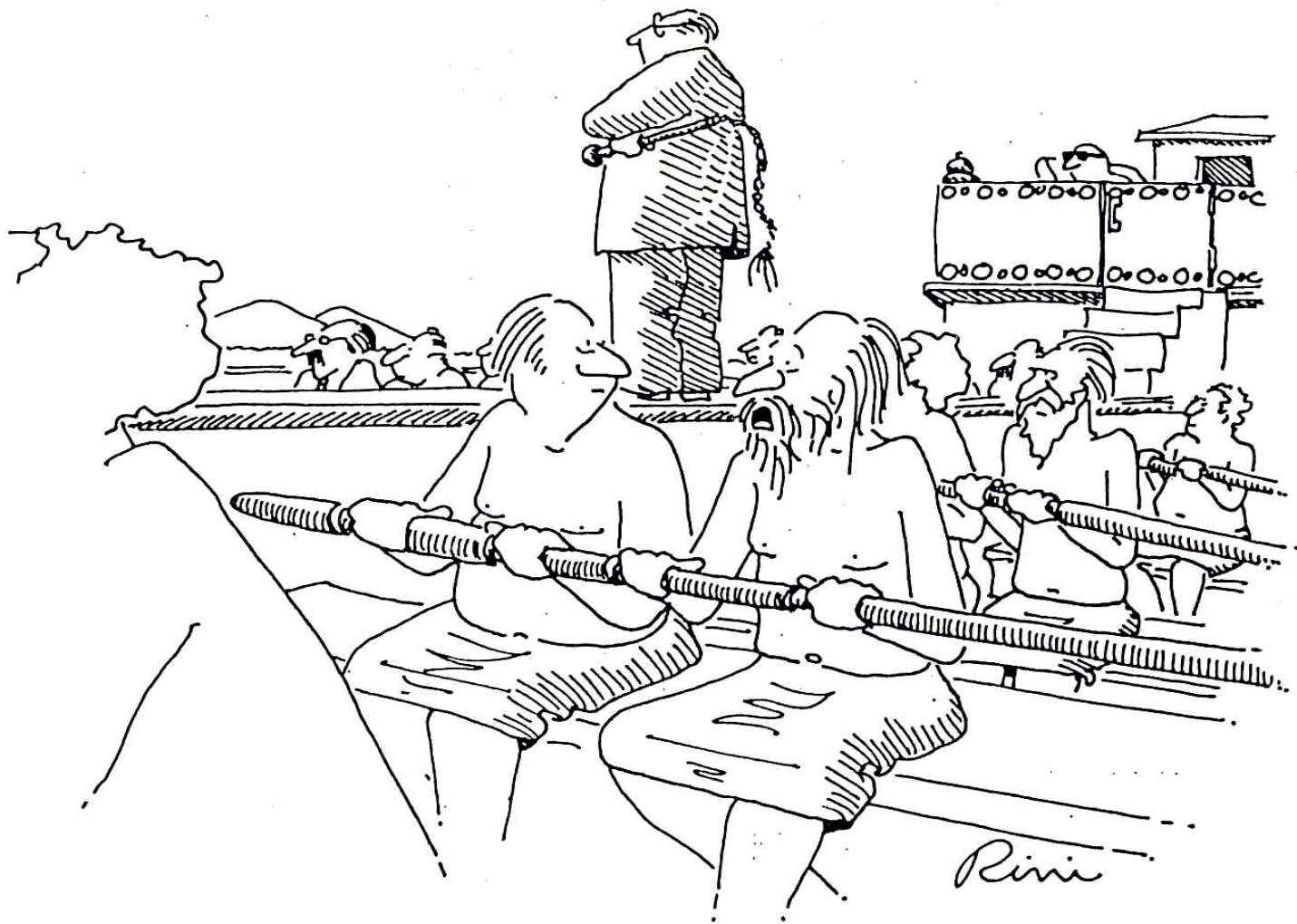
Market Power (*cont.*)

- Thus, embedded cost-based mitigation may cause more harm than no mitigation at all
- Some alternatives:
 - arbitrary price caps
 - price caps based on market price indices
 - price caps based on marginal costs
 - Open season auctions
- Mitigation should be limited to markets and time periods when market power is present



Conclusion

- Slippery slopes and tangled webs are things to be avoided if at all possible
- In limited cases (such as generation adequacy), they may be unavoidable
- There are no perfect answers - only some answers that are better than others
- Answers are dependent on where you sit



"Actually, I liked a little government regulation."