

Redefining Merchant Transmission

and Making It Happen

(But seriously, folks...)

Carnegie Mellon Conference in Electric Power Systems
Session: Industry View of Challenges and Opportunities
January 11, 2006

Jeffrey D. Roark
Sr. Strategic Planning Advisor
Tennessee Valley Authority

Preliminaries

- “I’m speaking on behalf of nobody I’ve ever met.”
(Bill Hogan)
- I’m speaking about merchant transmission in the organized spot markets with LMP and FTRs.
(Bilateral markets dominated by large vertically integrated utilities have a different set of issues and solutions. I’m not going there. I only *live* there.)
- I can’t spend time explaining LMP and FTRs.
(I hope it’s not necessary. We have to go beyond the basics.)
- When I re-define merchant transmission, you may not agree that it is still “merchant.”
(So what? Call it something else if you want to, but we need to crack this nut.)

LMP = Locational Marginal Pricing (including Marginal Losses!)

FTR = Financial Transmission Rights (rather than physical rights)

Things I heard here last year...

- “The merchant transmission model of people building transmission in exchange for FTRs is dead.”
(Roughly quoting Paul Joskow)
- “Financing of merchant transmission projects is very difficult.”
(Very roughly quoting a presenter)
- “It was a sobering dose of reality to hear about the difficulties with financing transmission.”
(I remember somebody sayin' somethin' like this...)

Merchant AC Transmission (Compensation by FTRs) Was Dead on the Delivery Table

- Were LMP and FTRs ever sufficient to bring forth merchant ac transmission?
 - ◆ It didn't happen. Some call this a weakness of LMP.
(Is it a weakness of your car that it won't fly? Won't float?)
- It was never going to happen.
 - ◆ LMP is not sufficient
(In the first LMP market design, this was known already.)
 - ◆ FTRs are helpful, but not even necessary
(for merchant transmission to happen)
- What makes me so smart?
(Scar tissue on the brain...)

Just Scar Tissue...

- I was a power-market-analyst in the world's *first* LMP market, in its first year of operation.
(My education in LMP was more expensive than Bill Hogan's.)
- The system was restructured all at one time:
 - ◆ Market designed while assets were owned by government
 - ◆ Design process was a deliberate consultative process
(but they didn't have to make everybody happy)
- First time out of the box with LMP, this problem of transmission expansion was solved in the design.
(It is not smooth, but works. Example: 800-mile \$250M 500kV line)
- But is it "merchant"? Does it matter?

(Where? Argentina implemented LMP with marginal losses in late 1992.)

Why Merchant Transmission?

- Decentralized decision-making is thought to be superior to central-planning decision-making.
(Transmission planners are frankly horrified by this idea.)
- Transmission would be built with risk capital, not rate-base capital, saving money for consumers.
(After all, isn't risk capital *always* searching for ways to save consumers money?)
- People would be deciding to spend their own money on their own behalf.

We can capture some of these benefits, but we need a valid business model for a transmission builder/owner.

What's wrong with the FTR business* ?

- The value of transmission is the value of incremental energy-market transactions it enables.
(FTRs hedge, but do not contain, this value.)
- The value of the transmission asset flows to the energy-market transactors.
(I know, ain't necessarily so... Work with me here...)
 - ◆ Should energy-market participants own transmission?
 - ◆ Should energy-market participants control transmission?
Probably not, but...
 - ◆ Don't participants have interest seeing transmission built?
 - ◆ Shouldn't participants be able to pay to make it happen?

* FTR Business = building transmission in exchange for long-term FTRs

Let's Re-Conceptualize "Merchant"

● Merchant Transmission:

Proposed by energy-market participants, built by a transmission provider selected through a public competitive procedure.

● Along with this, let us define

- ◆ the public competitive procedure for proposal and approval
- ◆ the cost-recovery mechanism
 - for the transmission owner (revenue requirement)
 - for the system administrator (cost-allocation)

Cost-Recovery for the Transmission Builder/Owner

- Approval through the public process allows recovery of revenue requirements through a tariff.
- The transmission owner could be at risk for the availability and capability of the asset, as specified in his certification. But *only* for this.
- The owner is not responsible or at risk for market success of energy-market participants.

If the market itself were creditworthy, would this not make transmission lines financeable by creditworthy, qualified builder/owners?

(Don't argue... He's seen it happen.)

The remaining parts are intertwined

Public Participative Process
+ Cost Allocation Methodology

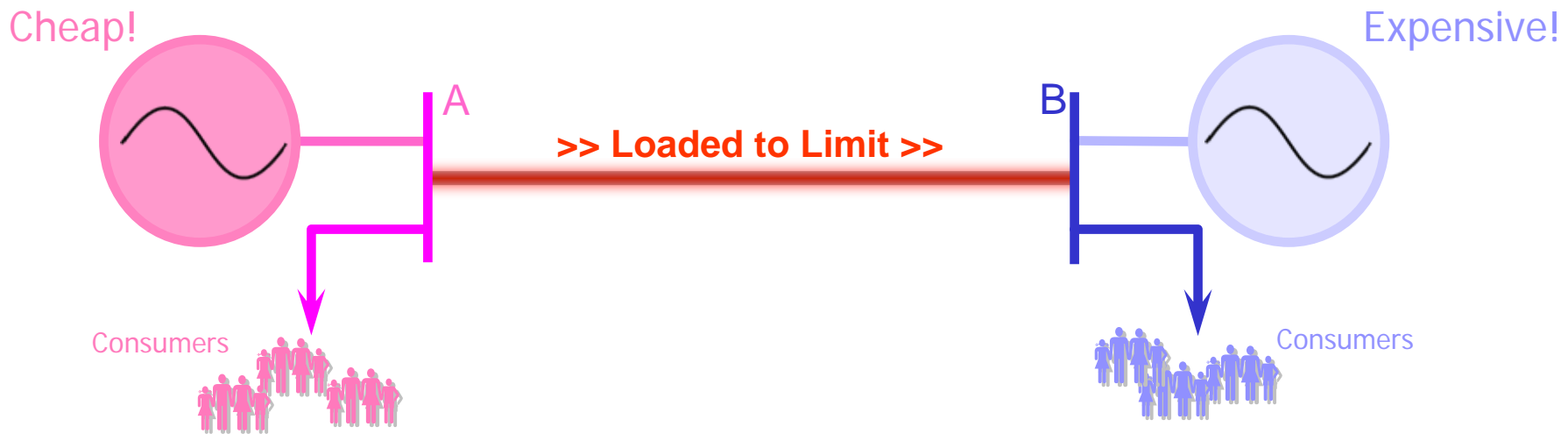
= “Beneficiaries Decide and Pay”

*“Beneficiaries Decide and Pay”
can be considered as the overarching principle
of this transmission autoexpansion methodology.*

Winners and Losers?

from constraint relief

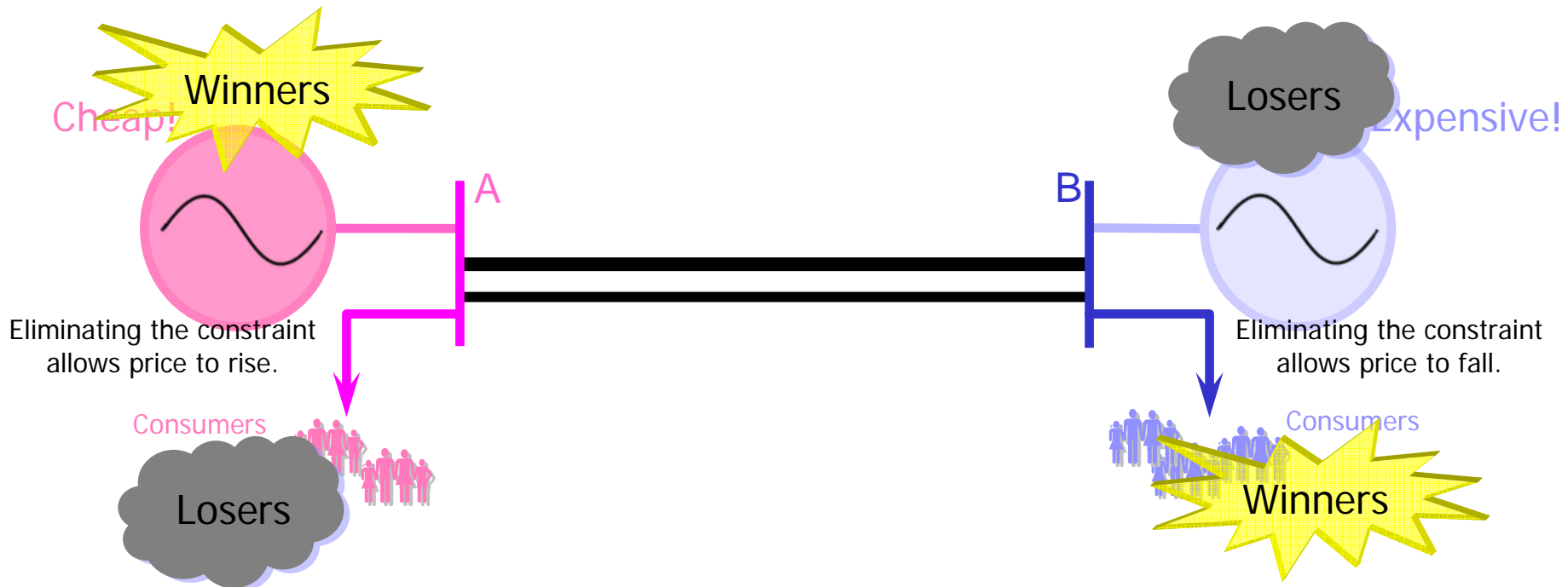
Who would benefit from eliminating the constraint?



Winners and Losers?

from constraint relief

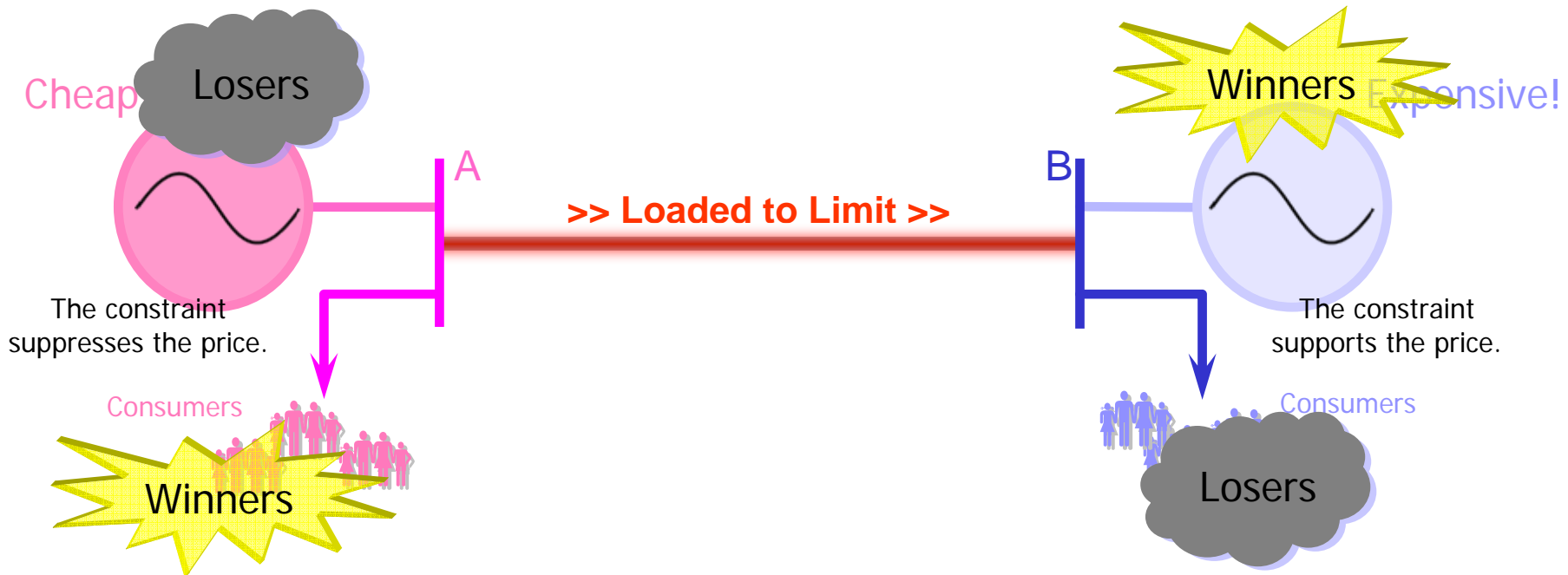
Who would benefit from eliminating the constraint?



Winners and Losers?

from the constraint itself

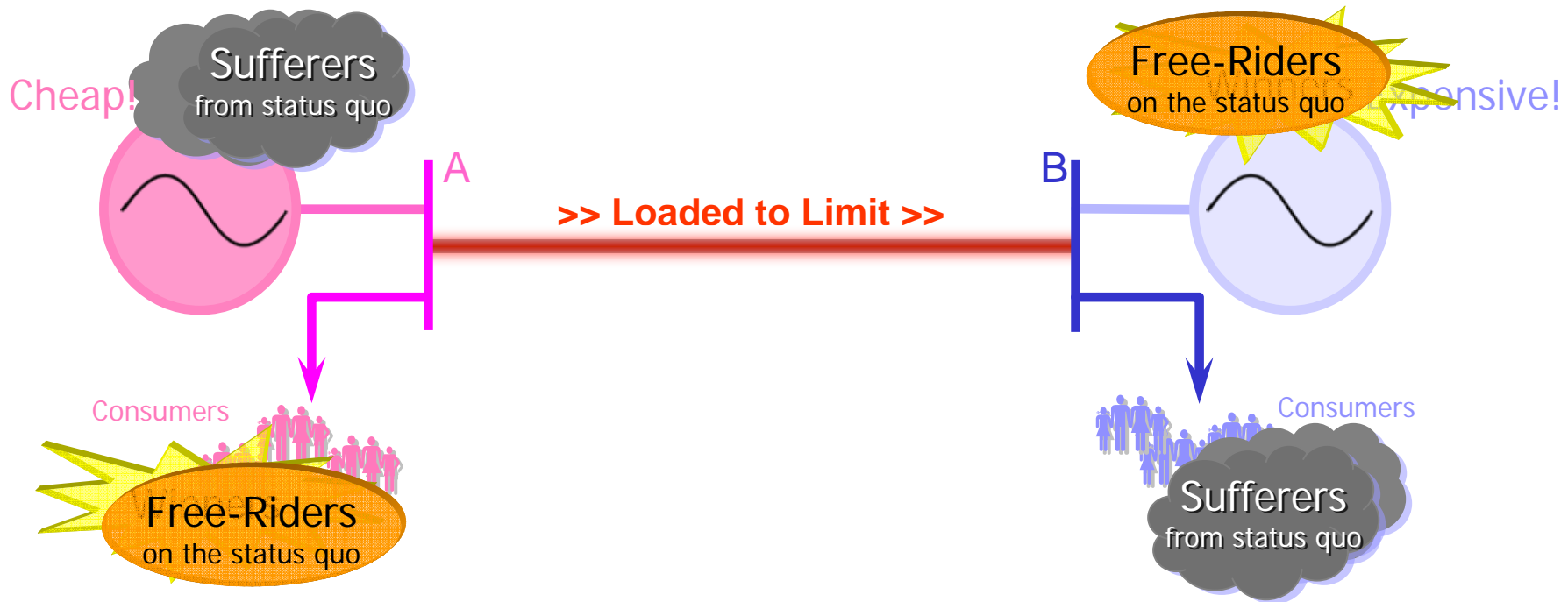
If eliminating a constraint produces “winners and losers,”
doesn't the constraint itself have winners and losers?



Winners and Losers?

of the status quo

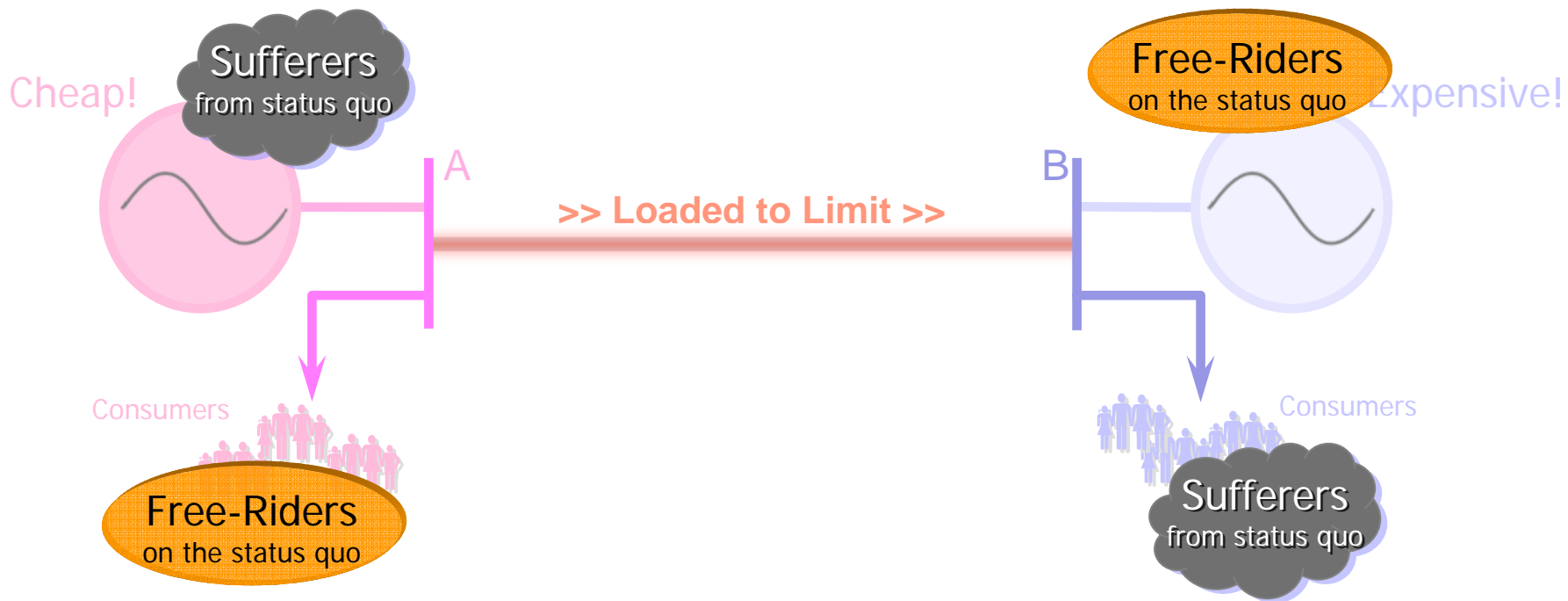
Somehow, "winners and losers" doesn't seem appropriate when describing the status quo.



Sufferers and Free-Riders

from/on the constraint (status quo)

These terms are perhaps more descriptive of market participants when transmission is needed.



Free-riders don't pay anybody to maintain the status quo.

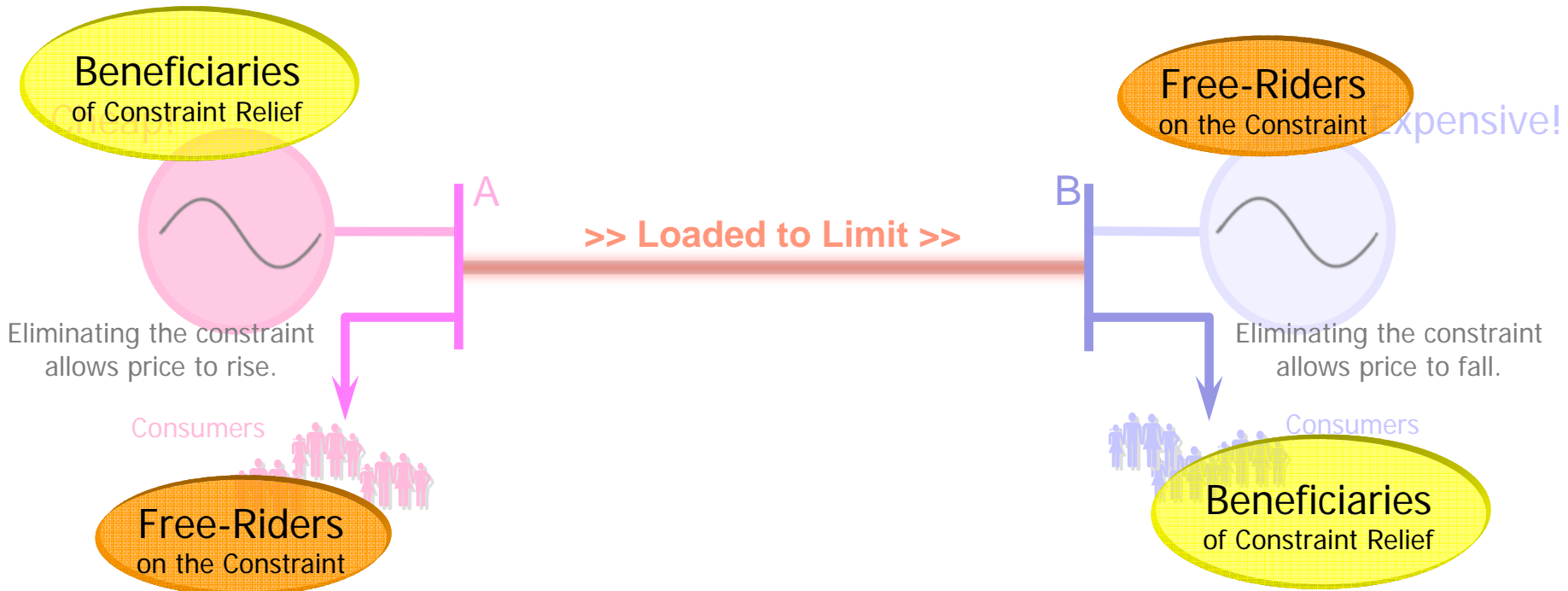
They can hedge, in deals with local sufferers,
but sufferers may see more opportunity in constraint relief.

Should free-rider concerns prevent sufferers from making a deal?

Beneficiaries and Non-Beneficiaries

from constraint relief

Who would benefit from eliminating the constraint?



Should the concerns of free-riders block economic constraint relief?

Beneficiaries and Non-Beneficiaries

from constraint relief

Who would benefit from eliminating the constraint?



Shouldn't beneficiaries be able to agree on constraint relief?

Yes, but only if *they pay* for the constraint relief, and *former free-riders don't*.

Beneficiaries Decide and Pay

(but other energy-market participants don't get to play)

"Beneficiaries agree on constraint relief and pay for it."

is a lot like...

People decide to spend
their own money on their own behalf.

On the assumption that this is a good thing,
let's look at creating a public process that can implement it.

Public Proposal & Approval Process (Straw Man)

- Who can propose transmission projects?
 - ◆ Sufferers of constraints
(...in consortium with a herd of consultants... *lots* of consultants...)

- Who must approve transmission projects?
 - ◆ The Regulator* [or RTO/ISO/System Administrator]
(whoever has the central transmission planning/analysis staff)
 - ◆ A Specific Majority of Affected Beneficiaries
(say, 70%. They don't all have to agree, but they will all pay.)

- ★ The regulator applies a "Golden Rule" standard. Projects must provide net benefit to the market as a whole. This eliminates "clever" projects that would further constrain the system, i.e., adding lines of negative net value.

Public Proposal & Approval Process (Straw Man)

- Who has no standing in the approval process?
 - ◆ Free riders on the status quo.
(They can't stop a beneficial project at this stage.)

- An approved project gains “official status”
 - ◆ It is now a project that the system is *going to do*.
 - ◆ The next step is to select a builder/owner.
 - ◆ The project is let out for bids.
 - ◆ The winning bidder can be unrelated to beneficiaries.

Public Proposal & Approval Process (Straw Man)

- The completed line qualifies for cost recovery
 - ◆ Beneficiaries are billed for the revenue requirements
(They don't have to finance the line!)
 - ◆ Costs are allocated pro rata with estimated benefits
 - ◆ Specific cost allocation lasts only through amortization
(15-20 years)

- Those who don't benefit in energy prices don't pay cost recovery on the transmission.
 - ◆ These consumers may lose some ground.
(C'est la vie, no? But isn't the result greater price equity?)

Who Are the Players in this Game?

- Transmission-Planner Consultants
 - Consortium-Building Consultants
 - Transmission-Only Companies
(who could become less territorial)
 - Generators / Marketers
 - Load Aggregators / LSEs / Co-ops / Munis
 - State Regulators
(perhaps voting on behalf of their constituents)
 - Approval Authority w/Transmission “Planners”
(They’re the technical overseers. They must be there.)
-

FTRs Offer Security of Project Benefits

- General Principle: FTRs* should be held by the parties paying the transmission bills.
- List of beneficiaries could grow over time. This could reduce billings but dilute benefits.
 - ◆ New loads/generators
- Long-term FTRs* could be exchanged for long-term commitment to undivided payment stream.
 - ◆ Could force new loads/generators to the margin, exposing them to full marginal cost of growth.
 - ◆ This essentially eliminates the free-rider problem.

* Or Auction Revenue Rights

Recap of Public Process

- Sufferers of transmission constraints seek ways to improve their position in the network.
 - ◆ Seek specialist consultants or transmission company
 - ◆ Specialist consultants seek out sufferers
 - ◆ Sufferers & consultants form consortia
- Consortium proposes to Approval Authority, who
 - ◆ Studies electrical feasibility
 - ◆ Applies “Golden Rule”
 - ◆ Determines universe of beneficiaries
 - ◆ Administers a vote of beneficiaries
 - ◆ Approves project, or not.

Recap of Public Process (cont'd)

- Approval Authority takes bids for construction, ownership, and maintenance of the project.
 - ◆ Bidders bid revenue requirement stream under pro forma performance-based rate structure
 - ◆ Bid covers 15- or 20-yr Amortization Period
 - ◆ Winning bidder builds project
- Cost recovery during Amortization Period
 - ◆ Transmission Authority remunerates transmitter
 - ◆ Transmission Authority bills appropriate parties

This procedure has *worked* in Argentina.

Research on beneficiary-pays allocations in a U.S. context is occurring. (PJM, MISO)

Beneficiary-pays is a pretext to Beneficiary-decides.

We're heading this way...