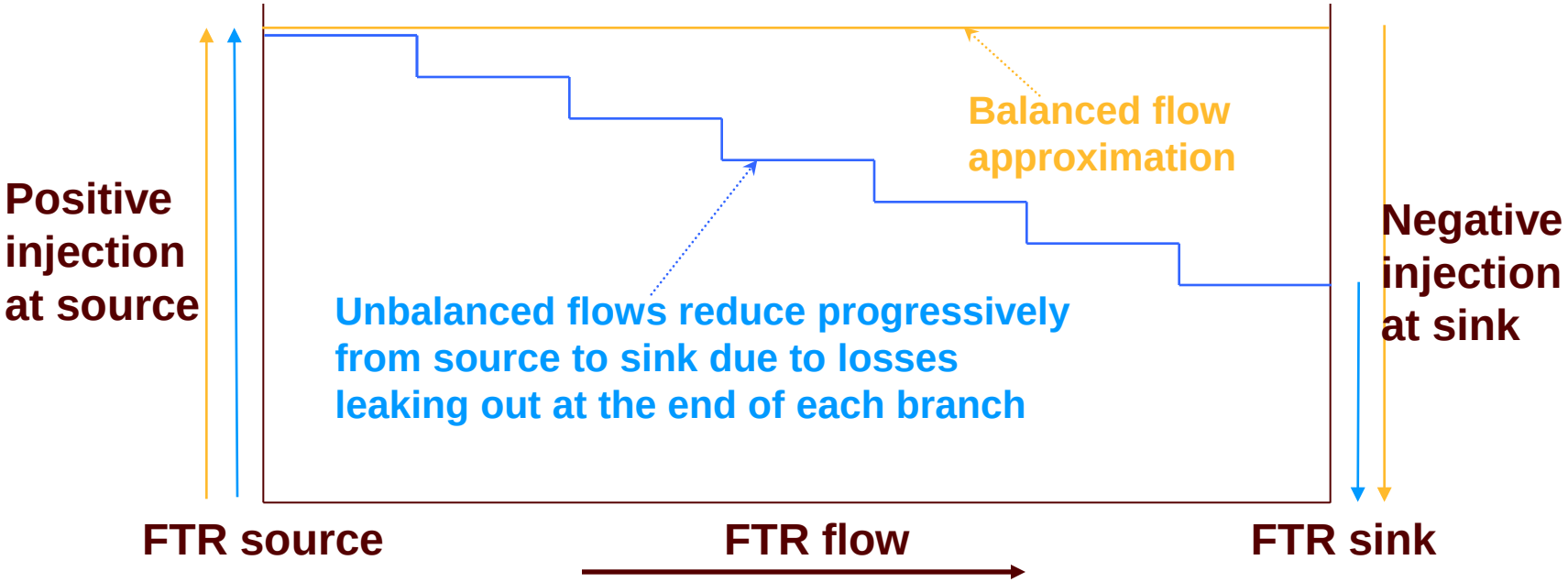
Balanced versus unbalanced injection patterns

FTR Code amendment briefing

July 2012

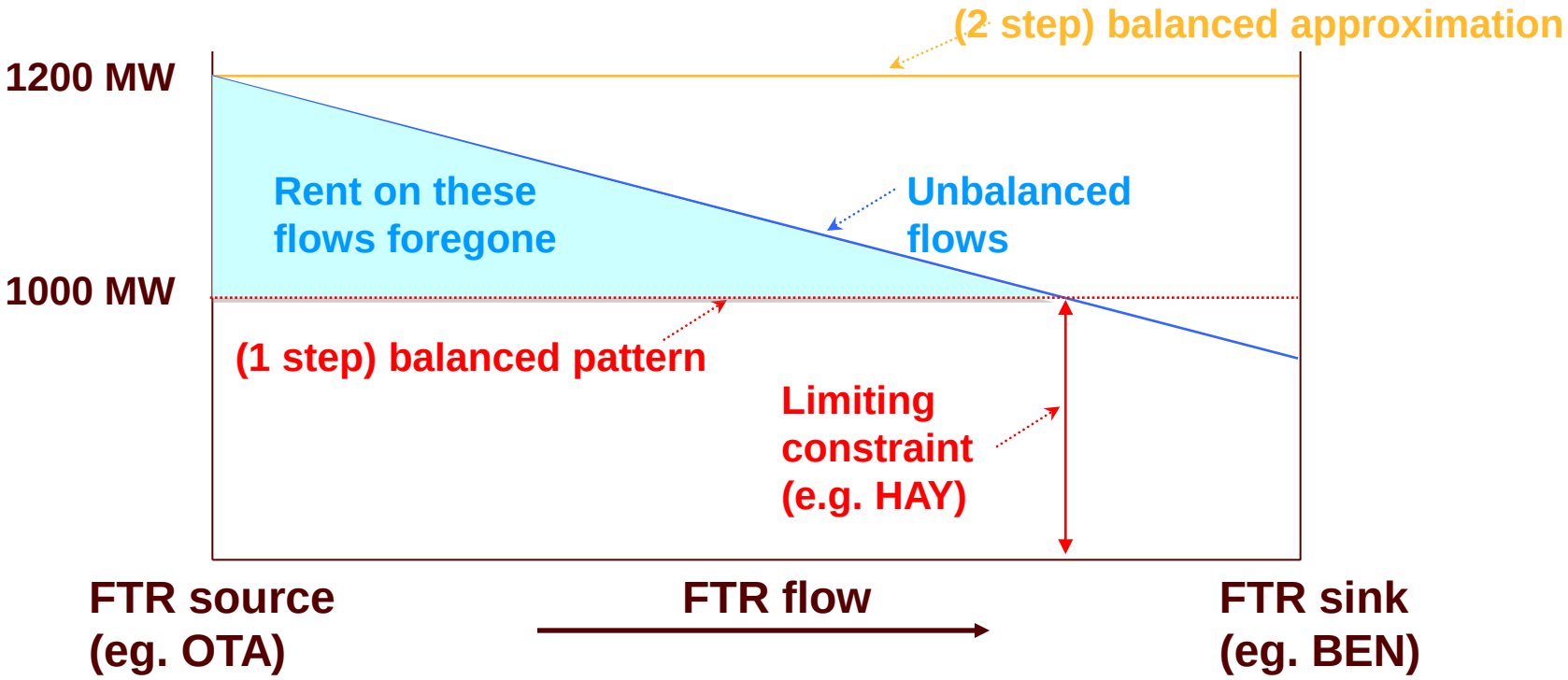
Current code provisions (2 step approach)

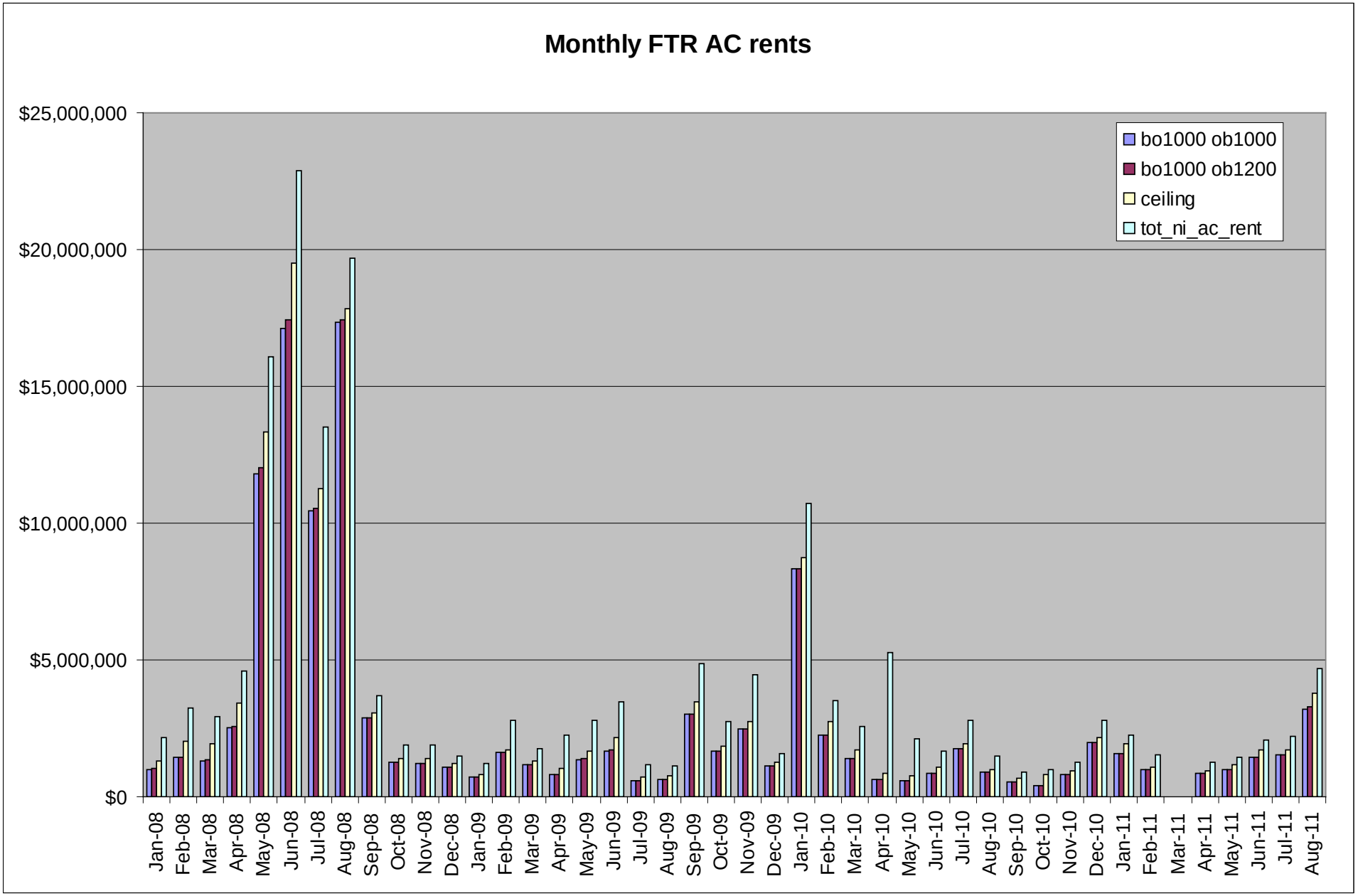
- Feasible flow pattern is unbalanced (lossy)
- Approximate by a balanced (lossless) pattern
- Lossless flow ≥ Lossy flow on each branch (over estimate)



2 step versus 1 step approach

- Using the 2 step approach (unbalanced followed by balanced approximation) ensures access to the theoretically correct LCE
- Going straight to balanced injection (1 step) potentially forgoes some rent when the limiting constraint is near the downstream end




Monthly FTR AC rents
$25,000,000
$20,000,000
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$10,000,000
$5,000,000
$0
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bo1000 ob1200
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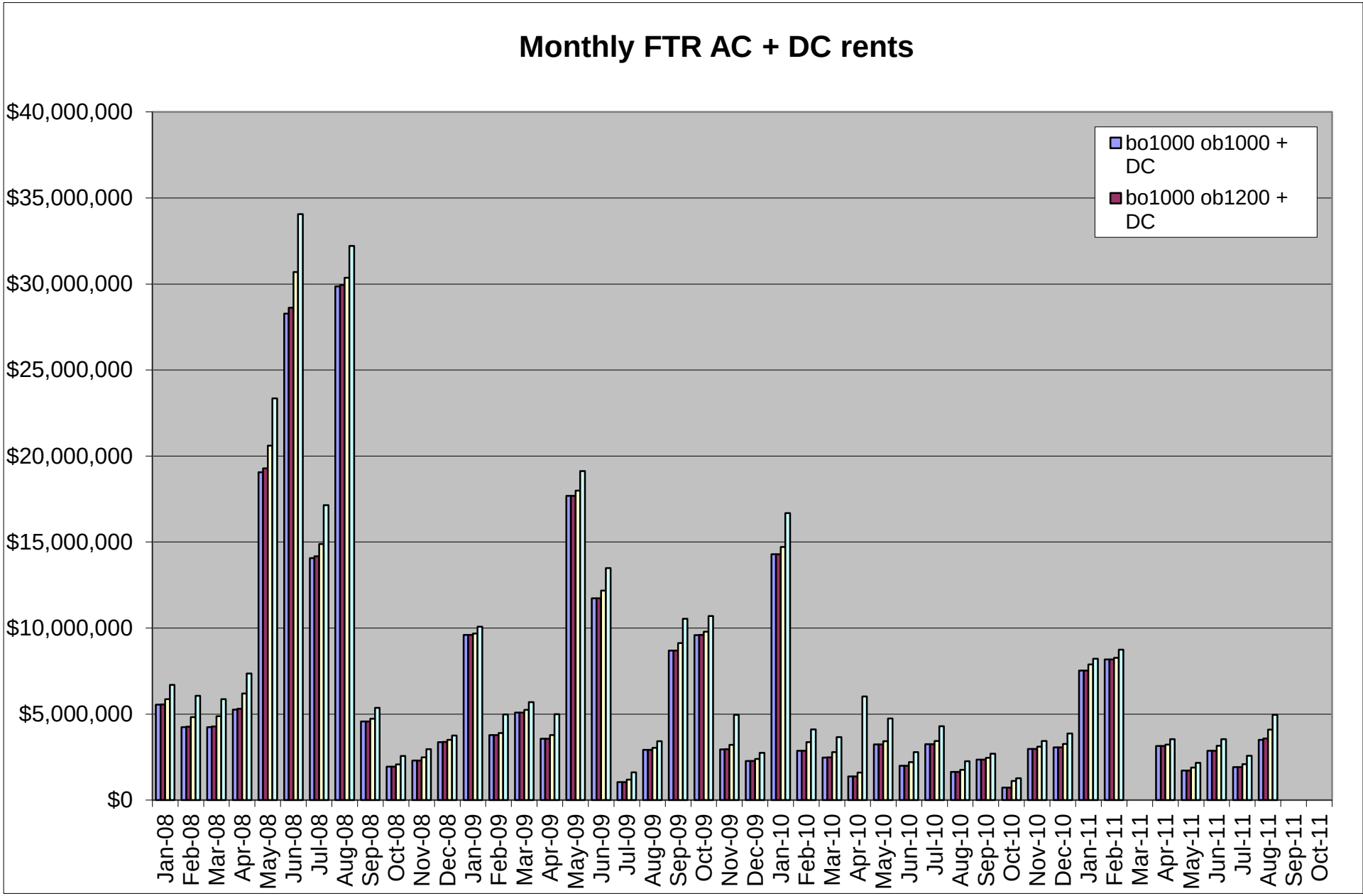
Monthly FTR AC + DC rents
$40,000,000
$35,000,000
$30,000,000
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$10,000,000
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Allowing for differences between the FTR Grid and the “On the Day” grid

- Extreme injection patterns based on an over-estimated grid (no outages, no contingencies)
- Use shift factors to deduce branch/constraint loadings on the “On the Day” grid for each extreme injection pattern
- Shift factors avoid having to solve a full load flow for each injection pattern for each trading period
- Still collect rent on constraints in series with “On the Day” bottlenecks
- Simplified by using lossless shift factors and lossless injection patterns