



FERC Order 1920: Assessing Benefits of Transmission

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High-capacity regional transmission expansion...

Benefit

Increases access to lower-cost generation during normal conditions

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... contingency ...

... and stress conditions

High-capacity regional transmission expansion...

Benefit
Increases access to lower-cost generation during normal...
... contingency ...
... and stress conditions
Decreases transmission losses elsewhere in the system
Requires fewer generators to maintain reliability
Lessens the severity of reliability...
... and resiliency events
Offsets the need for new or refurbished local transmission projects

High-capacity regional transmission expansion...

#	Benefit	Measured by
3	Increases access to lower-cost generation during normal...	Generation Production
5	... contingency ...	
6	... and stress conditions	
4	Decreases transmission losses elsewhere in the system	Generation Capacity
7		
2b	Requires fewer generators to maintain reliability	Unserved Energy
2a	Lessens the severity of reliability...	
6	... and resiliency events	
1	Offsets the need for new or refurbished local transmission projects	Transmission Capacity

High-capacity regional transmission expansion...

Increasing modeling complexity

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2b	Requires fewer generators to maintain reliability	Unserved Energy
2a	Lessens the severity of reliability...	
6	... and resiliency events	
1	Offsets the need for new or refurbished local transmission projects	Transmission Capacity

Which benefits are currently quantified by planners

#	Benefit	Currently considered by
3	Increases access to lower-cost generation during normal...	● ● ● ● ● ● ●
5	... contingency ...	● ● ○ ○ ○ ○ ○ ○
6	... and stress conditions	● ○ ○ ○ ○ ○ ○ ○
4	Decreases transmission losses elsewhere in the system	● ● ● ● ○ ○ ○ ○
7		● ● ● ○ ○ ○ ○ ○
2b	Requires fewer generators to maintain reliability	● ● ● ● ● ○ ○ ○
2a	Lessens the severity of reliability...	● ● ○ ○ ○ ○ ○ ○
6	... and resiliency events	● ○ ○ ○ ○ ○ ○ ○
1	Offsets the need for new or refurbished local transmission projects	● ● ● ○ ○ ○ ○ ○
[8]	Other	● ● ● ● ● ○ ○ ○

Challenges to benefit calculation

Modeling complexity

Avoiding double counting

Choice of reference case

Monetization of benefits

Consistent data and benefit
quantification methods with neighbors

Challenges to benefit calculation

Modeling complexity



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Monetization of benefits

Consistent data and benefit quantification methods with neighbors

- Benefits of transmission in “change” case must be measured against reference case
- Choice of reference case will impact each benefit differently

Case	 Generation Profile	 Transmission Profile
Change	Footprint-wide capacity expansion	Footprint-wide capacity expansion
Ref A	Current system	Current system
Ref B	Footprint capacity expansion	Current system
Ref C	Zonal capacity expansion	Current system
Ref D	Zonal capacity expansion	Zonal capacity expansion

- Does the same reference case need to be used for quantifying all benefits?

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Monetization of benefits

Consistent data and benefit quantification methods with neighbors

- Many benefits (i.e., production costs) are naturally monetized, but not all.
- How to monetize un-monetized?
 - Cost of new entry: \$ / MW new capacity
 - Value of lost load: \$/MWh of unserved energy
- Is consistency across benefits needed?
- Is it ok to not monetize all benefits?
 - Can avoided unserved energy just be avoided unserved energy?
 - If un-monetized, how to include in mandatory cost-to-benefit evaluation?

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Consistent data and benefit quantification methods with neighbors

- Interregional transmission shown to have even more benefits than regional; need more!
- Can we reasonably plan and allocate costs for interregional transmission if neighboring regions use different benefit quantification methods?

