



# Order No. 1920 Compliance

## Grid Enhancing Technologies

Julia Selker, Executive Director, WATT Coalition  
September 2024

# Topics

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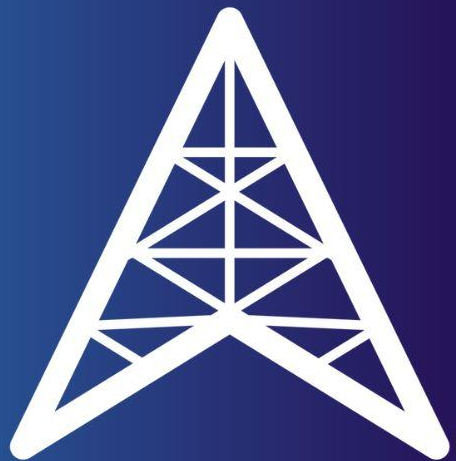
## Agenda

1. About the WATT Coalition
2. Order 1920 on Transmission Technologies
3. Dynamic Line Ratings in long-term planning
4. Advanced Power Flow Control in long-term planning
5. Topology Optimization in long-term planning



# Working for Advanced Transmission Technologies

**Mission:** The Working for Advanced Transmission Technologies (WATT) Coalition advocates for policy that supports wide deployment of Grid Enhancing Technologies (GETs) to accelerate the clean energy transition and lower energy costs.



WATT

[www.watt-transmission.org](http://www.watt-transmission.org)



## Order No. 1920 on Transmission Technologies (see pages 845-848)

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- Require transmission providers in each transmission planning region to consider
  - dynamic line ratings
  - advanced power flow control devices
  - advanced conductors
  - and transmission switchingfor each identified transmission need, in long-term regional planning and Order 1000 processes.



# More from Order No. 1920

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- For new facilities and upgrades
- Evaluate whether ATTs alone or with other upgrades “would be more efficient or cost-effective than selecting new regional transmission facilities or upgrades to existing transmission facilities that do not incorporate these technologies.”
- Evaluate against all required benefits and standard selection criteria, and follow Good Utility Practice




# Examples of Grid Enhancing Technologies in Planning

**Building a Better Grid:  
HOW GRID-ENHANCING TECHNOLOGIES  
COMPLEMENT TRANSMISSION BUILDOUTS**

PREPARED BY  
T. Bruce Tsuchida  
Linquan Bai  
Jadon M. Grove  
The Brattle Group

APRIL 20, 2023



**Brattle**

**WATT COALITION**  
Working for Advanced  
Transmission Technologies

**Unlocking the Queue with  
Grid-Enhancing Technologies**

CASE STUDY OF THE SOUTHWEST POWER POOL  
FINAL REPORT – PUBLIC VERSION

PRESENTED BY  
T. Bruce Tsuchida  
Stephanie Ross  
Adam Bigelow



PREPARED FOR  
WATT (Working for  
Advanced Transmission  
Technologies) Coalition

FEBRUARY 1, 2021



**Brattle**

Lessons from first deployment of  
**Dynamic Line Ratings**



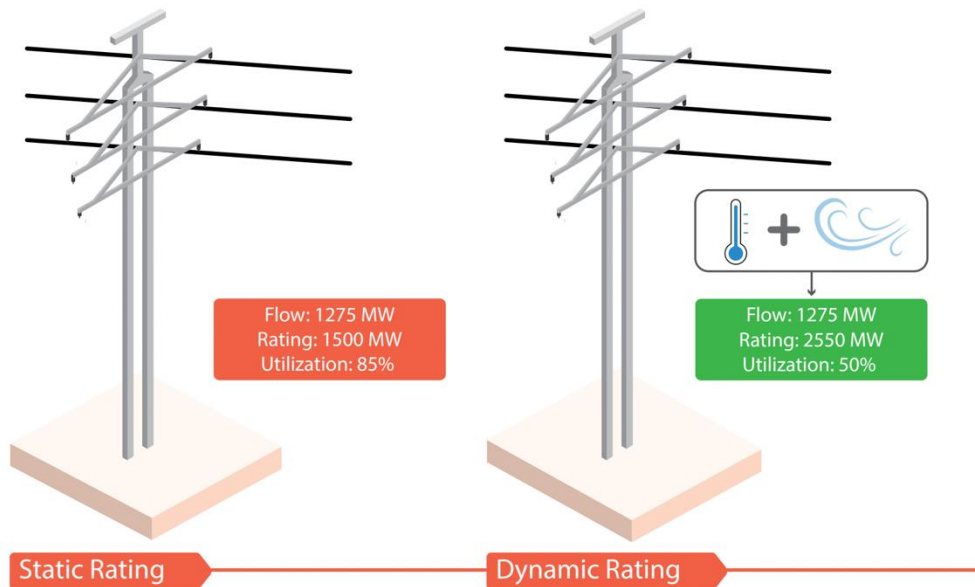
42 LineVision Sensors on  
5 diverse AES lines

An AES | LineVision case study

**aes**, **LINEVISION**



# Dynamic Line Ratings



Since 2012, Belgium sees >20% capacity increases >90% of the time (increase capped at 30%)

PPL Electric Utilities avoids \$60 million in redispatch costs in first year of 2-line DLR deployment

AES found 61% average capacity increase over static line ratings on a 345kV line



# Dynamic Line Ratings

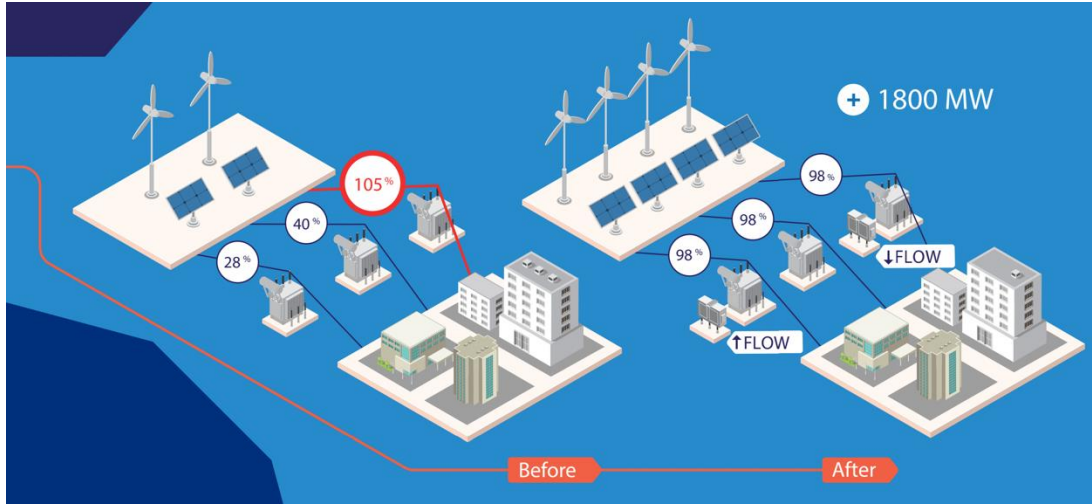
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- Scenarios should be self-consistent – if a line has 20%+ more capacity all winter, that should be recognized.
- DLR can be deployed to mitigate constraints if they emerge before new infrastructure comes into service.
- Many other study inputs are uncertain – planners can choose confidence levels when applying DLR uprates in planning scenarios.





# Advanced Power Flow Control



[VELCO DOE GRIP Grant with EPRI to increase VT-NY transfer capacity](#)

[Central Hudson unlocks 185 MW of transmission capacity](#)

[California utilities identify reliability applications](#)



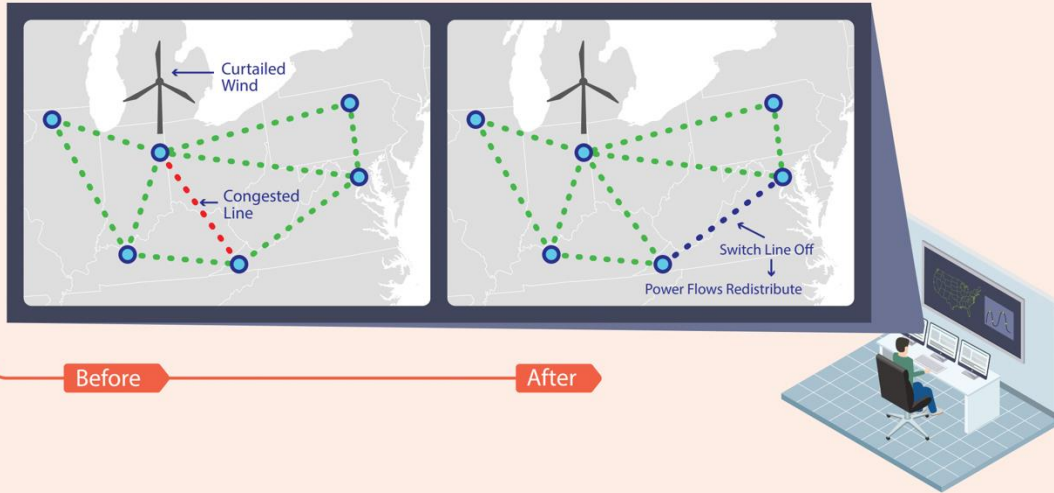
# Advanced Power Flow Control

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- APFC can be modeled as adjustable reactance in steady-state transmission planning models, by adding a “Modular Static Synchronous Series Compensator.”
  - In production cost modeling, a utility can model variable reactance.
  - Modeling packages exist to automatically insert MSSSCs, or utilities can work with vendors for assessment.
  - Modeling packages are available for dynamic studies.



# Topology Optimization



ISO New England and SPP using Topology Optimization for outage planning

[ERCOT](#) and [MISO](#) allow reconfigurations for congestion mitigation

[Study: Topology Optimization could reduce PJM congestion costs by 50% on average](#)



# Topology Optimization

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- Generation retirements and additions and new transmission infrastructure change grid topology.
  - Reconfigurations could resolve constraints that emerge with these changes at negligible cost.
- Planners may find value in increasing optionality for future reconfigurations through substation design.





WATT

# Working for Advanced Transmission Technologies

For more information contact

Julia Selker / [jselker@gridstrategiesllc.com](mailto:jselker@gridstrategiesllc.com)

[www.watt-transmission.org](http://www.watt-transmission.org)