



Powering positive change

The Hatch H.G. Acres symposium

April 15-16, 2025 | Hotel X, Toronto, Canada

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complete agenda



HATCH



Competitive transmission solutions

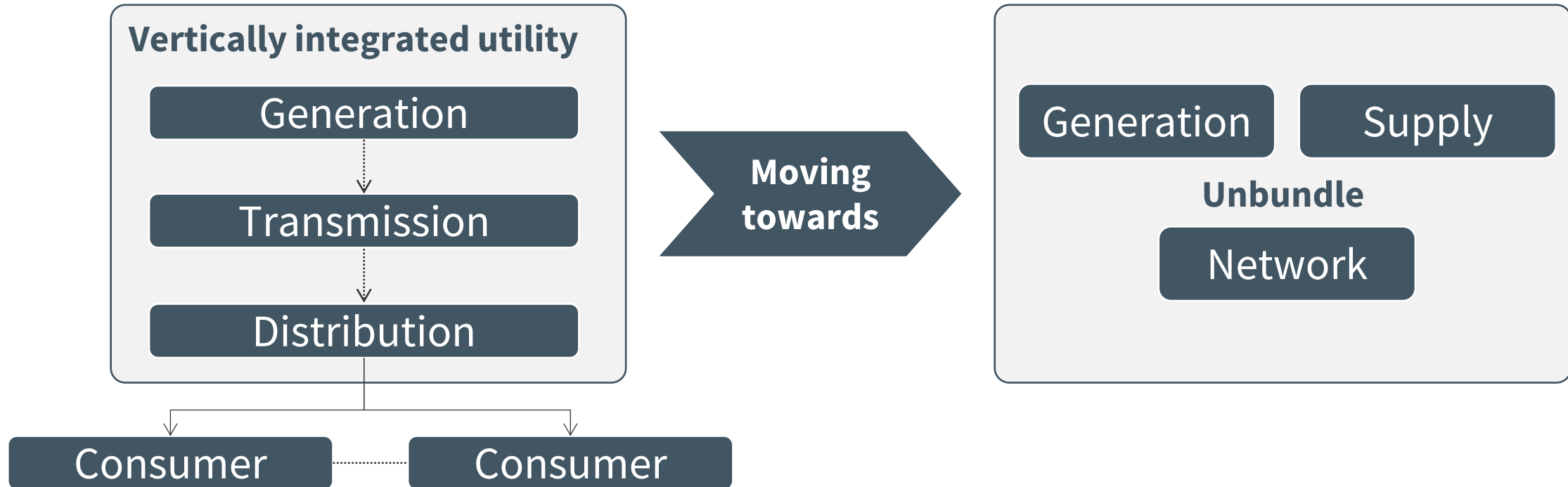
Alireza Khosroshahi
Power Systems Study Lead, Hatch



Agenda

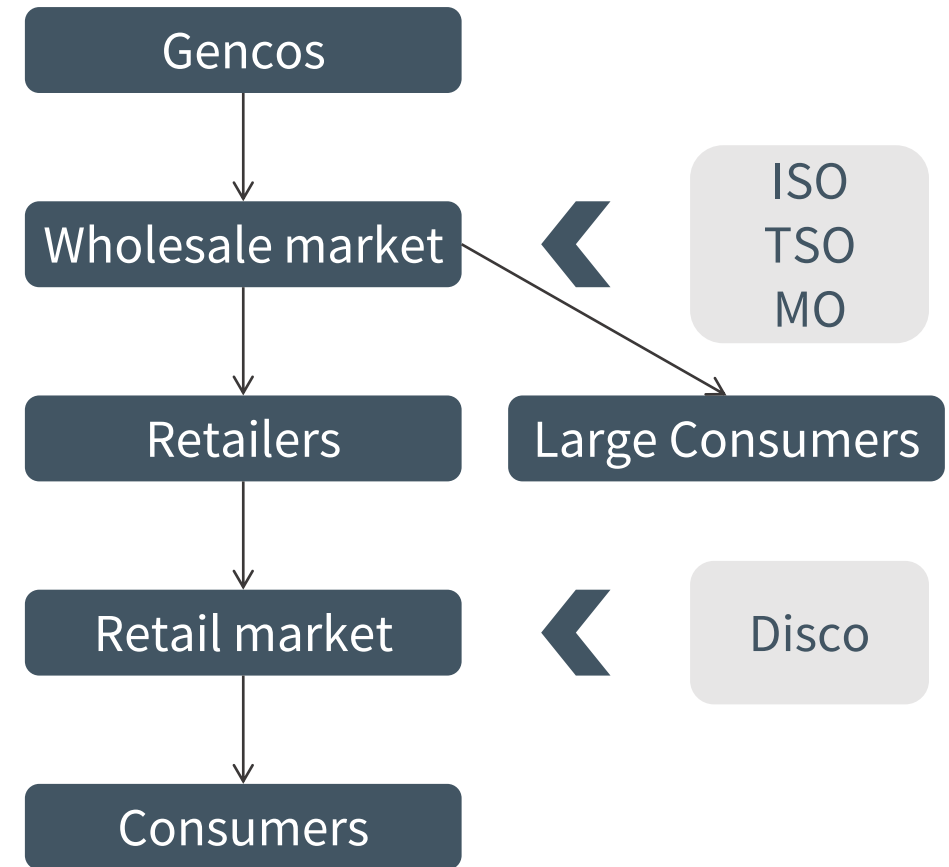
- 1 Changes in electricity market models
- 2 How that impacts utilities and stakeholders
- 3 How to prepare ourselves to the changes
- 4 Discussion

Electricity market trend



Electricity market model with retail competition

- Generation Company
- Independent System Operator
- Transmission System Operator
- Market Operator
- Distribution Companies



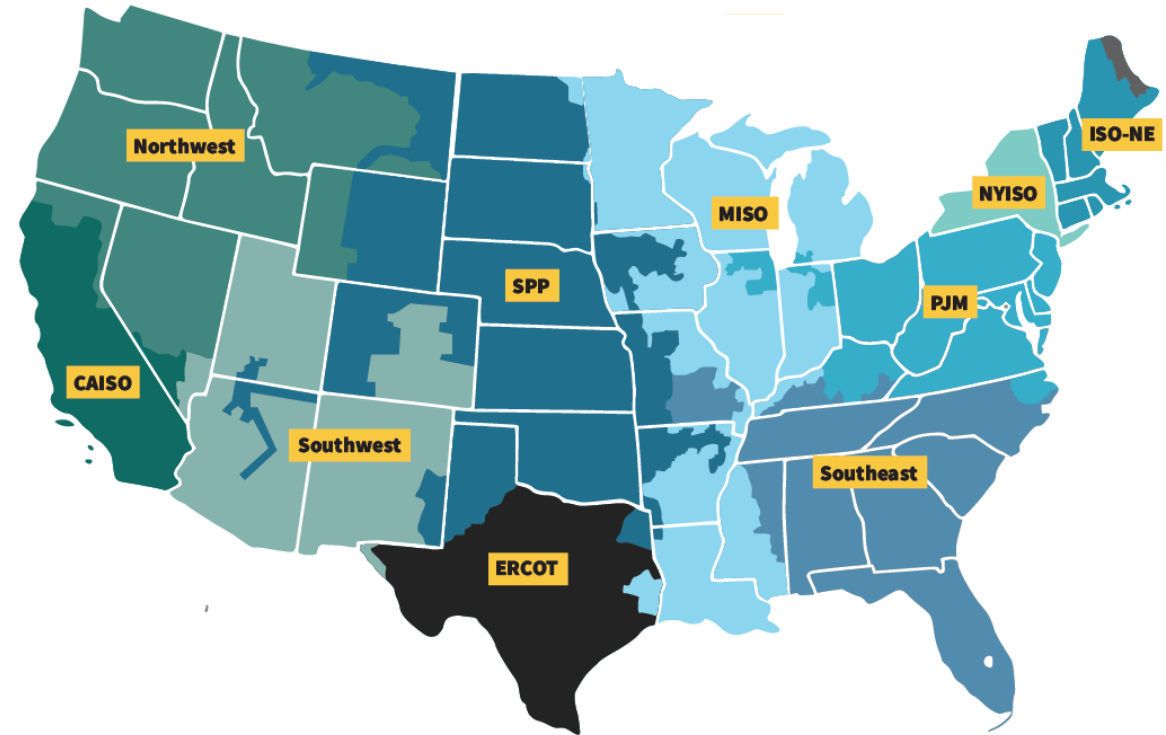
Conventional vs competitive planning from economic perspective

- No massive budget for system to keep enough operating reserve capacity
- Investments evaluated through profits rather than meeting public service needs
- Investors evaluate not only the cost, but also the return
- The benefit/cost ratio is a significant planning index

Current US competitive transmission

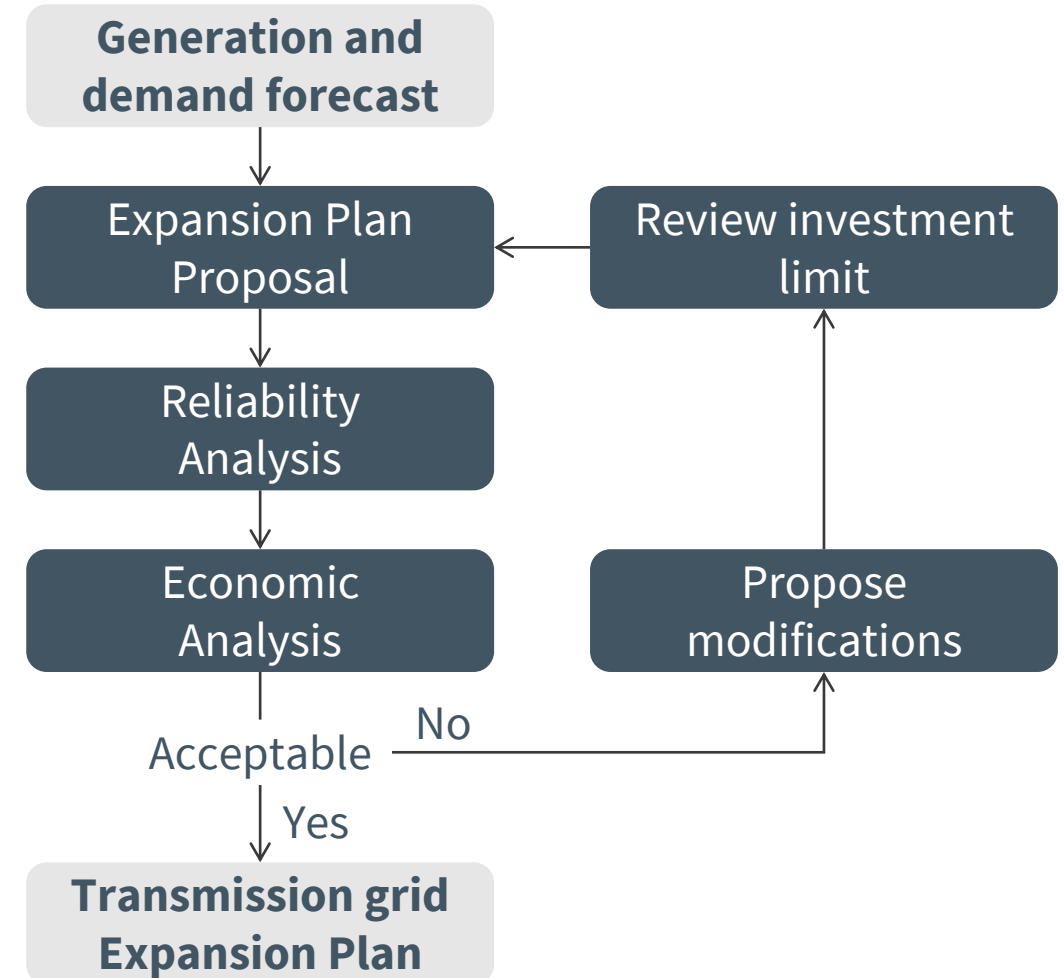
Two approaches:

1. Solutions identified by Regional Transmission Organization (RTO)
 - MSIO, SPP, ERCOT and CAISO
2. Solutions brought by transmission owners
 - PJM, ISMM-NE, and NYISO

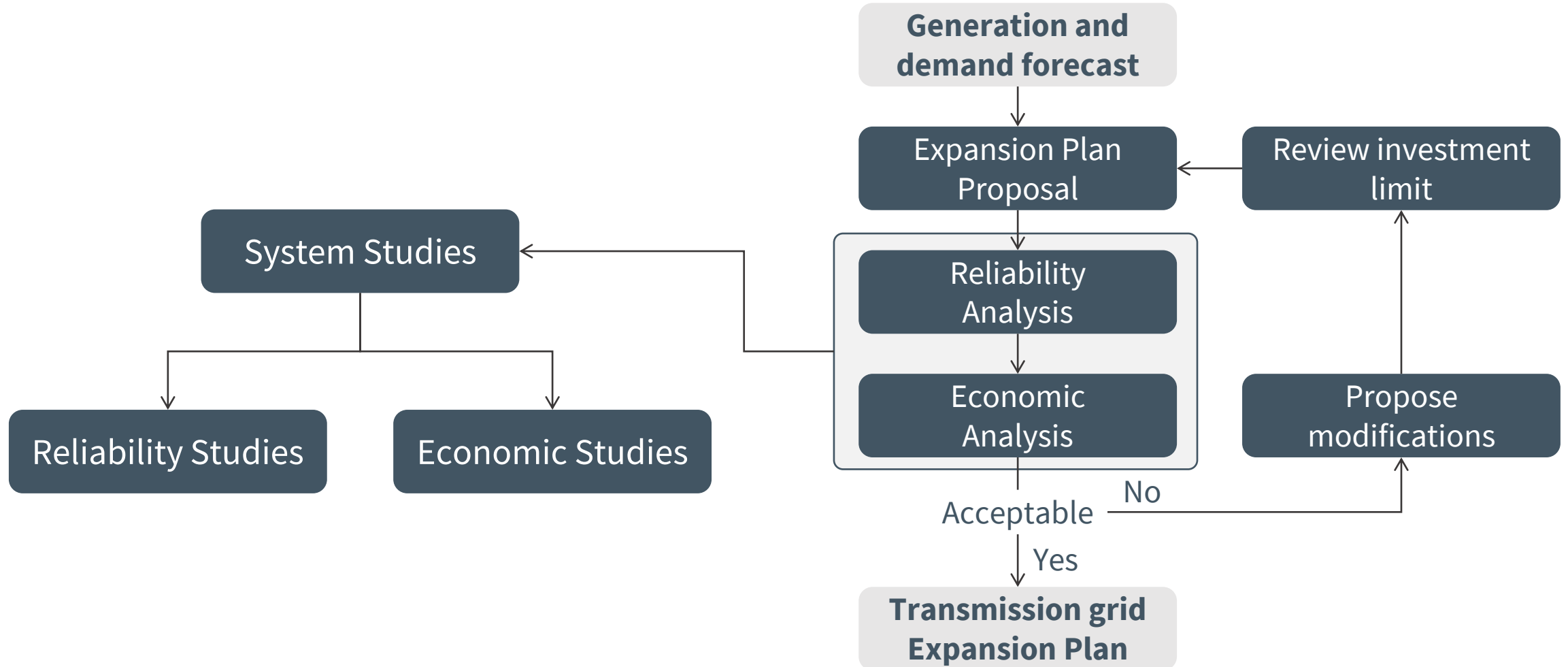


Transmission owners must:

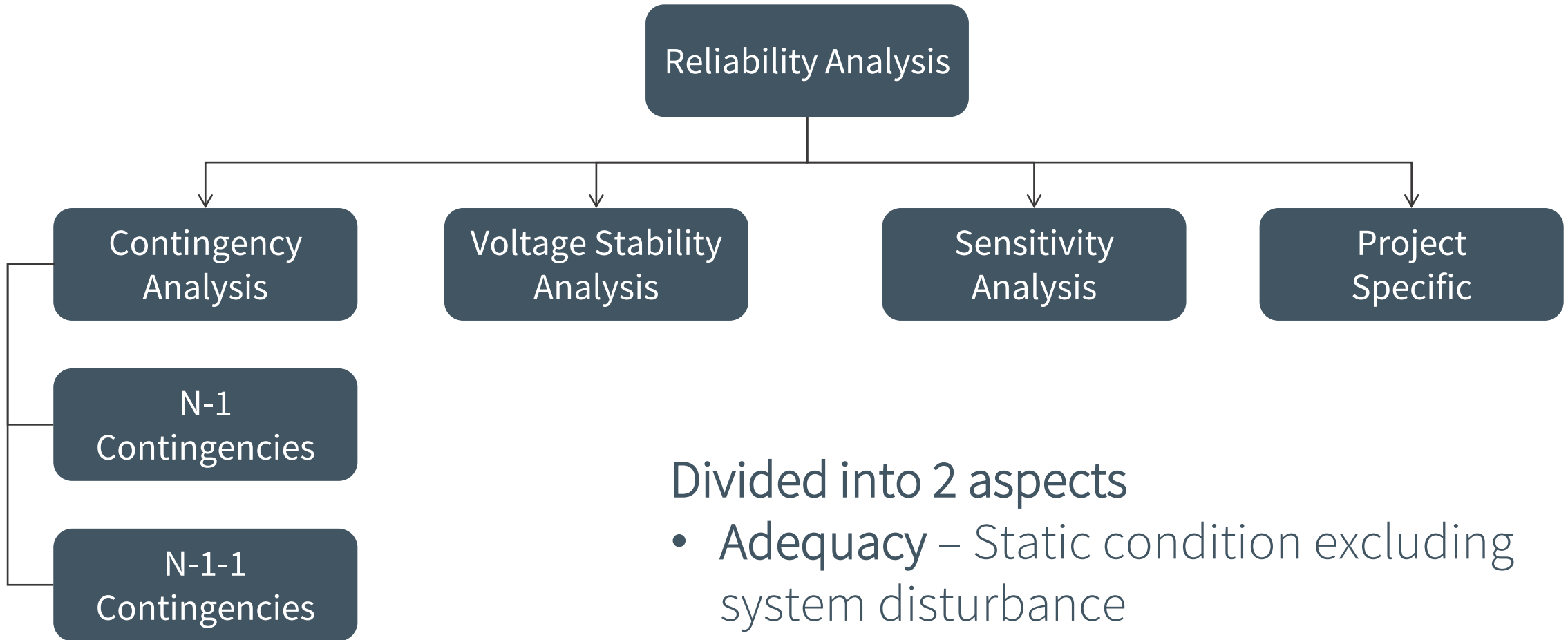
- ✓ Identify regional reliability issues, market efficiency needs, and public policy needs.
- ✓ Develop optimal transmission projects to meet regional needs.
- ✓ Evaluate and justify alternative
- ✓ Perform reliability analysis of projects
- ✓ Analyze project benefits from an economic perspective



System studies for competitive transmission planning



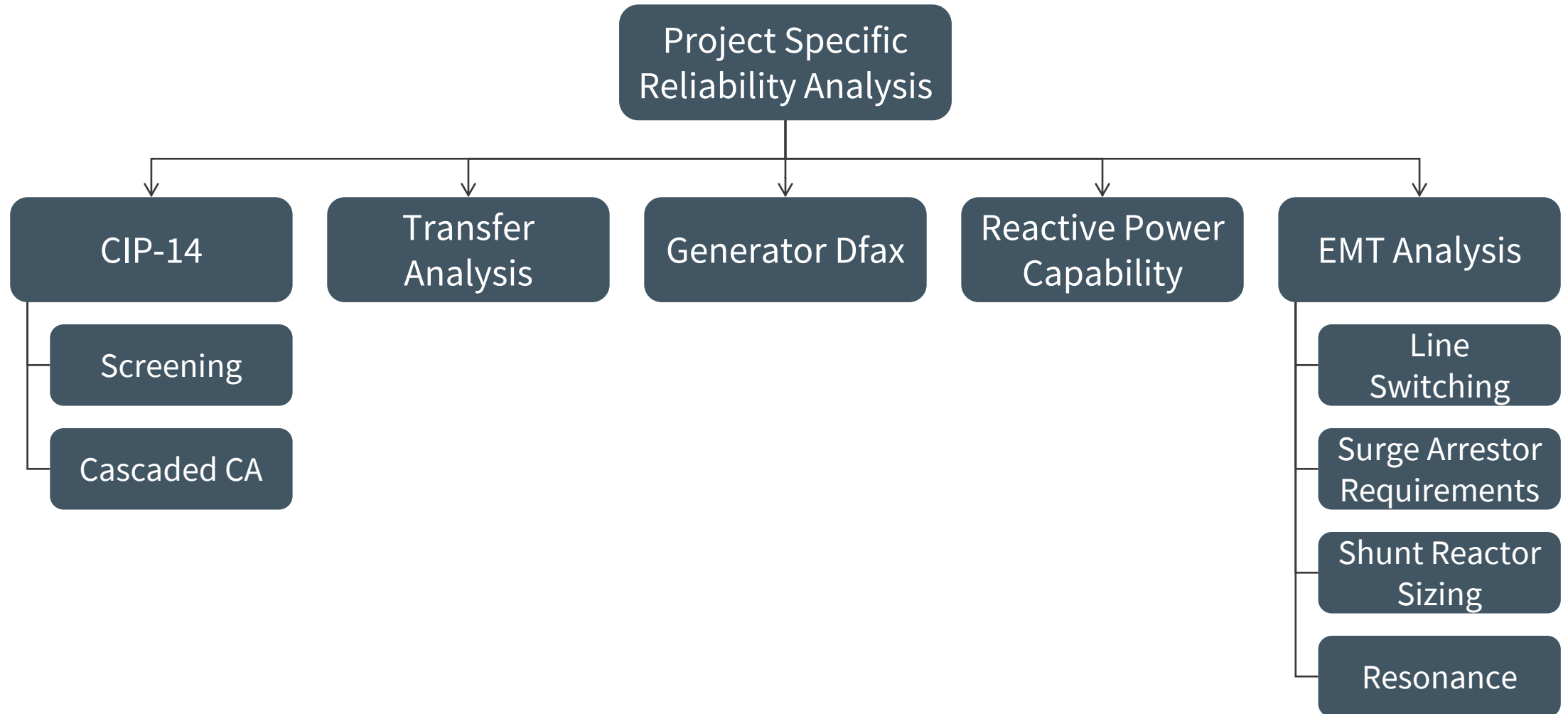
Reliability Analysis



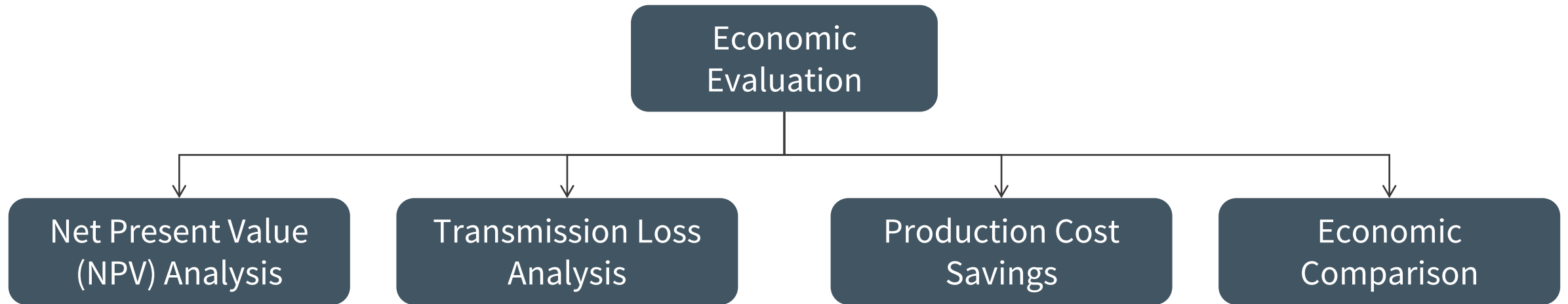
Divided into 2 aspects

- **Adequacy** – Static condition excluding system disturbance
- **Security** - responds to disturbances

Project Specific Studies



Economic Studies



Uncertainties

- Weather
- Demand growth
- Fuel costs
- Construction time
- Market impact
- Social environment
- Economic growth
- Behaviour of other participants
- New uncertainties may come from the demand side

Transmission planning challenges

- The great diversity of regulatory regimes
- The new behavior of power systems
- No fully accepted methodologies
- Increasing uncertainties



References

1. CIGRE TRANSMISSION PLANNING IN AN ENVIRONMENT OF COMPETITION IN GENERATION
2. IEEE A Framework for Transmission Planning in a Competitive Electricity Market
3. IEEE Centralized vs. Competitive Transmission Expansion Planning: The Need For New Tools
4. IEEE Comprehensive Regional Transmission Planning – ERCOT Experience
5. IEEE Prepare to Meet the Challenges in Regional Transmission Planning and Development

Questions

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Thank you.

For more information,
please visit www.hatch.com