

# Most Promising Market Design Options

## Network Representation

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# Design options and specific assessment criteria for network representation in markets

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- Design options assessed:
  - ✓ Nodal Pricing (short term marginal cost of supply in each node)
  - ✓ Zonal Pricing (zones efficiently defined)
  - ✓ Hybrid Zonal Pricing (zones defined within each control area)
  - ✓ Single Node Dispatch (networkless dispatch)
  - ✓ Average Zonal Pricing (Load: Average of nodal prices per zone; Flexible Load and Generation: pay as bid)
- Specific assessment criteria
  - ✓ Efficiency (Marginal cost reflectivity, Market modeling imperfection costs, Liquidity)
  - ✓ Robustness
  - ✓ Implementability (Level of coordination required, Computational feasibility, Compatibility with existing regulation, Simplicity, Implementation costs, Experience with its regulation, Possible extension to other time frames)
  - ✓ Fairness (Price discrimination, Transparency)

# Most promising design options for Network Representation for each criterion


	Weakest Design Options	In-between Design Options	Strongest Design Options
Efficiency Criterion	✓ Single Node Dispatch	✓ Zonal Pricing ✓ Average Zonal Pricing ✓ Nodal Pricing	✓ Hybrid Zonal Pricing
Robustness Criterion	✓ Single Node Dispatch	✓ Zonal Pricing ✓ Average Zonal Pricing	✓ Nodal Pricing ✓ Hybrid Zonal Pricing
Implementability Criterion	✓ Nodal Pricing ✓ Average Zonal Pricing ✓ Single Node Dispatch	✓ Hybrid Zonal Pricing	✓ Zonal Pricing
Fairness Criterion	✓ Nodal Pricing ✓ Average Zonal Pricing	✓ Zonal Pricing ✓ Hybrid Zonal Pricing	✓ Single Node Dispatch

# Most promising design options for Network Representation

Assessment Criteria	Design Options
High Grades	<ul style="list-style-type: none"><li>✓ Hybrid Zonal Pricing</li></ul>
Average Grades	<ul style="list-style-type: none"><li>✓ Zonal Pricing</li><li>✓ Nodal Pricing</li></ul>
Low Grades	<ul style="list-style-type: none"><li>✓ Single Node Dispatch</li><li>✓ Average Zonal Pricing</li></ul>

# Most promising design options for Network Representation: arguments

Design Options	Weak points (-)	Strong points (+)
<ul style="list-style-type: none"> <li>✓ Hybrid Zonal Pricing</li> <li>✓ Zonal Pricing</li> </ul>	<ul style="list-style-type: none"> <li>• Low compatibility with existing regulation (price discrimination)</li> <li>• Not fair (price discrimination)</li> <li>• <b>Zonal Pricing:</b> MC Reflectivity in meshed grids, Market Modeling Imperfection Costs in Meshed Grids</li> </ul>	<ul style="list-style-type: none"> <li>• High Liquidity</li> <li>• Easy to compute dispatch</li> <li>• Possible extension to other time frames</li> <li>• <b>Hybrid Zonal Pricing:</b> High Local Marginal Cost Reflectivity, Large Robustness</li> <li>• <b>Zonal Pricing:</b> Large experience with its utilization</li> </ul>
<ul style="list-style-type: none"> <li>✓ Nodal Pricing</li> <li>✓ Average Zonal Pricing</li> <li>✓ Single Node Dispatch</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Single Node Dispatch:</b> MC Reflectivity, Market Modeling Imperfection Costs, Robustness, Compatibility with Regulation, Extension to several time frames</li> <li>• <b>Nodal pricing, Average Zonal Pricing:</b> Liquidity, Level of coordination required, Lack of compatibility with regulation, complexity, Implementation costs, lack of Fairness and experience (Av. Zonal)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Nodal Pricing and Average Zonal Pricing:</b> Modeling Imperfection Costs</li> <li>• <b>Nodal Pricing:</b> MC Reflectivity, Robustness</li> <li>• <b>Single Node Dispatch:</b> Liquidity, Simplicity, Computational Feasibility, Level of Coordination Required, Experience with its Utilization, Transparency, and No Price Discrimination</li> </ul>

 Most promising design options (overall strong grades)

 Discarded design options (overall weak grades)



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Thank you very much  
for your attention