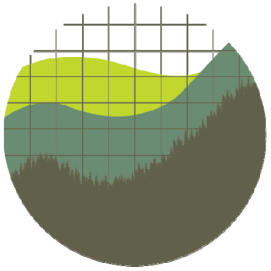

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The Role of Information in DER Deployment

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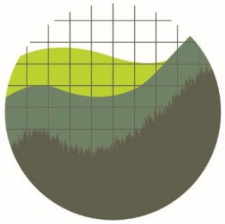
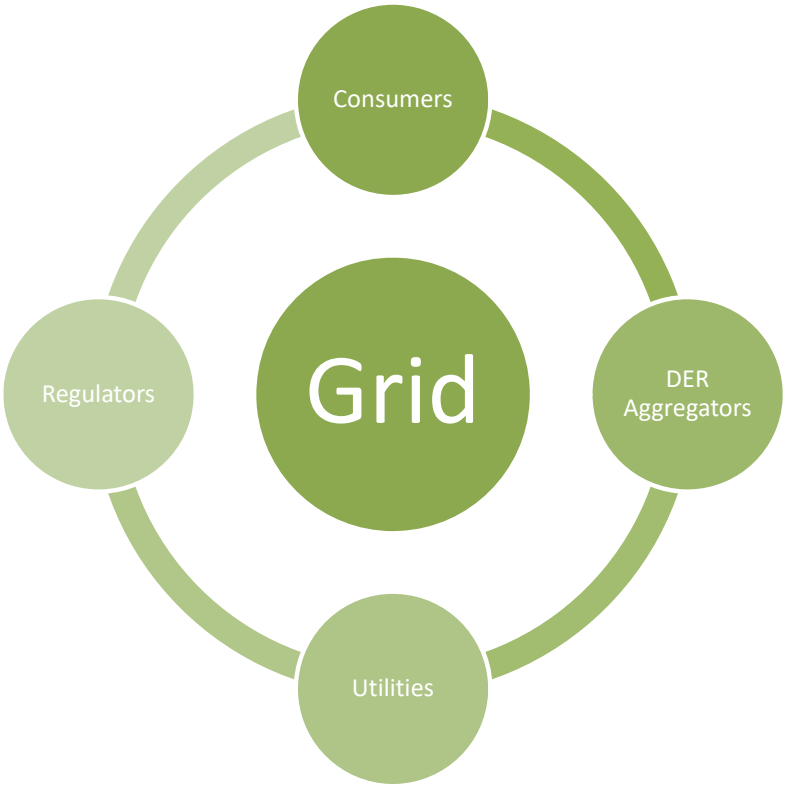
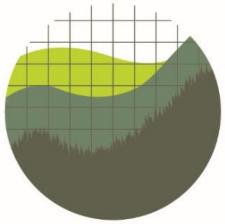


Motivation



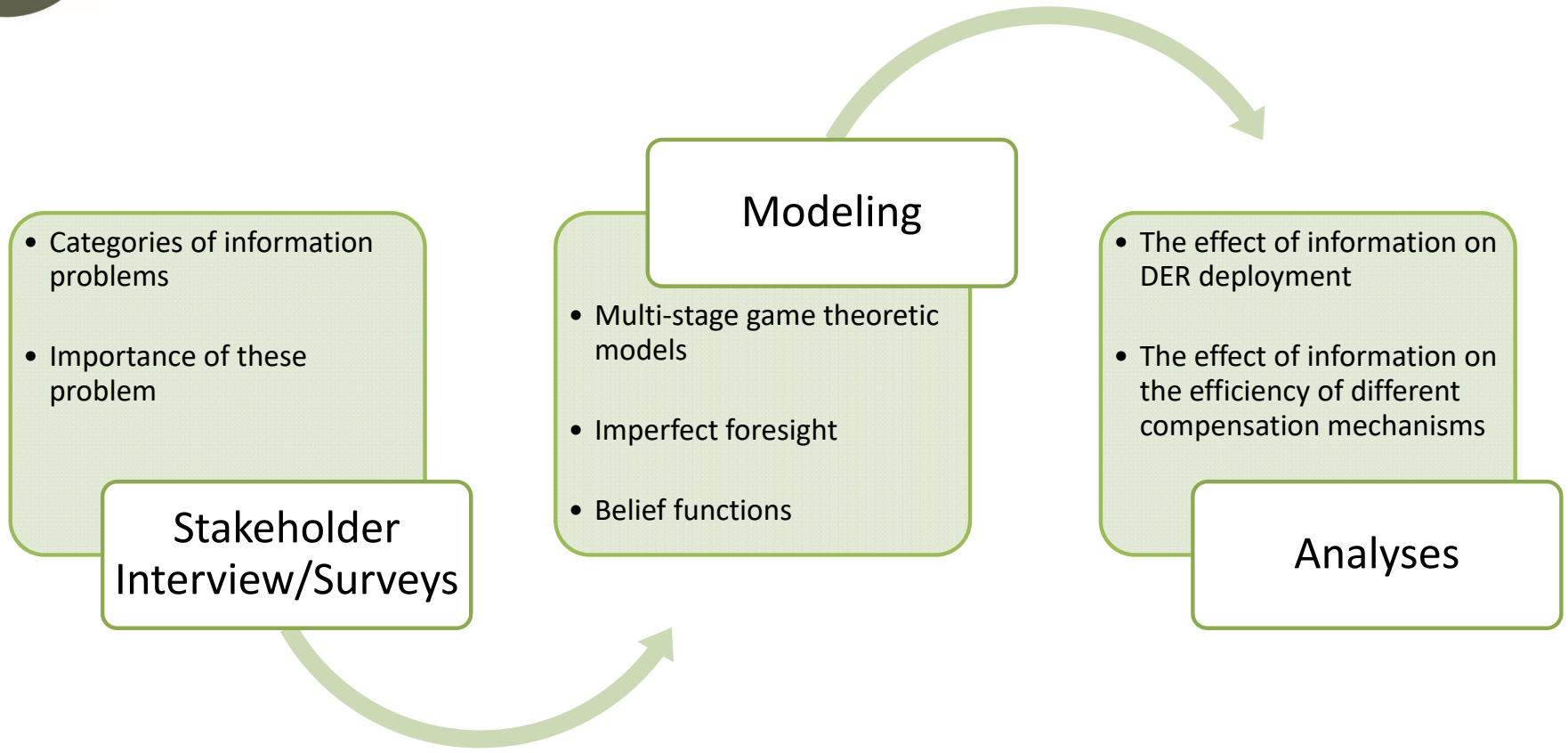
- Debates about DER policies and compensation are intensifying
- Information problems are not usually taken into account in economic & engineering models that inform policy discussions
- Similarly strategic interactions between stakeholders are not usually taken into account

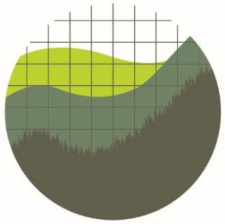


Questions

- What are some information problems that are important to the stakeholders in this space?
- How do these problems affect the efficiency of outcomes?
- What are the implications of these problems for the expected outcomes under different DER compensation policies?

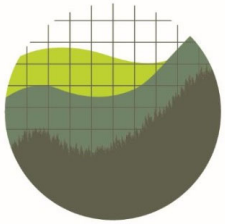
Methodology





Papers

- “Value of Information for Optimal DER compensation”, (with Y. Dvorkin and A. Khan)
- “Value of Information in DER rollout”, (with Y. Dvorkin and A. Khan), *under review*
- “Impact of Imperfect Foresight on the Optimal DER Deployment, Remuneration and Policy”, (with J. Kim, S. Bialek, and Y. Dvorkin), *under review*
- “Who knows what: information barriers to efficient DER roll-out”, (with J. Kim, S. Bialek, Y. Dvorkin), *under review*
- “Strategic Policymaking for Implementing Renewable Portfolio Standards: A Tri-level Optimization Approach”, (with J. Kim, S. Bialek, and Y. Dvorkin), IEEE Transactions on Power Systems, Volume: 36, Issue: 6, Nov. 2021
- “Energy Transition, Distributed Energy Resources, and the Need for Information”, IAEE Energy Forum, Third Quarter 2020, (with S. Bialek, J. Kim, and Y. Dvorkin)

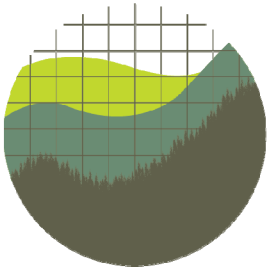


Key Insights from the Project

- There are substantial but heterogeneous information problems across the country, mostly about distribution network and consumer demand data
- In the baseline cases with no information asymmetry:

$$SW^{DLMP} > SW^{VS} > SW^{NEM}$$

- Imperfect foresight and information asymmetry about hosting capacity or consumer demand generally reduce social welfare due to sub-optimal DER roll-out
- However, this welfare loss is not sufficient to erase all the efficiency gains achieved by more accurate compensation of DERs based on their energy, capacity, and environmental values



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