Quantifying Locational Net Benefits of DERs for Distribution Systems

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Today's presentations and discussion

- Objective: Refine the objectives and scope of a collaborative-led study on the costs and benefits of distributed non-wires alternatives

- Presentation topics, include:
  - What are the elements of distribution system planning?
  - How is the value of DERs considered on the distribution system?
  - What are other states doing on distribution system planning?
  - What are the methodologies and data requirements to study locational net benefits?
  - How are risk and uncertainty considered?

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Discussion questions

- Focus on the *what* you want to get out of the study before determining the *how* you will perform the study

1. **What are your desired goals of the study?**

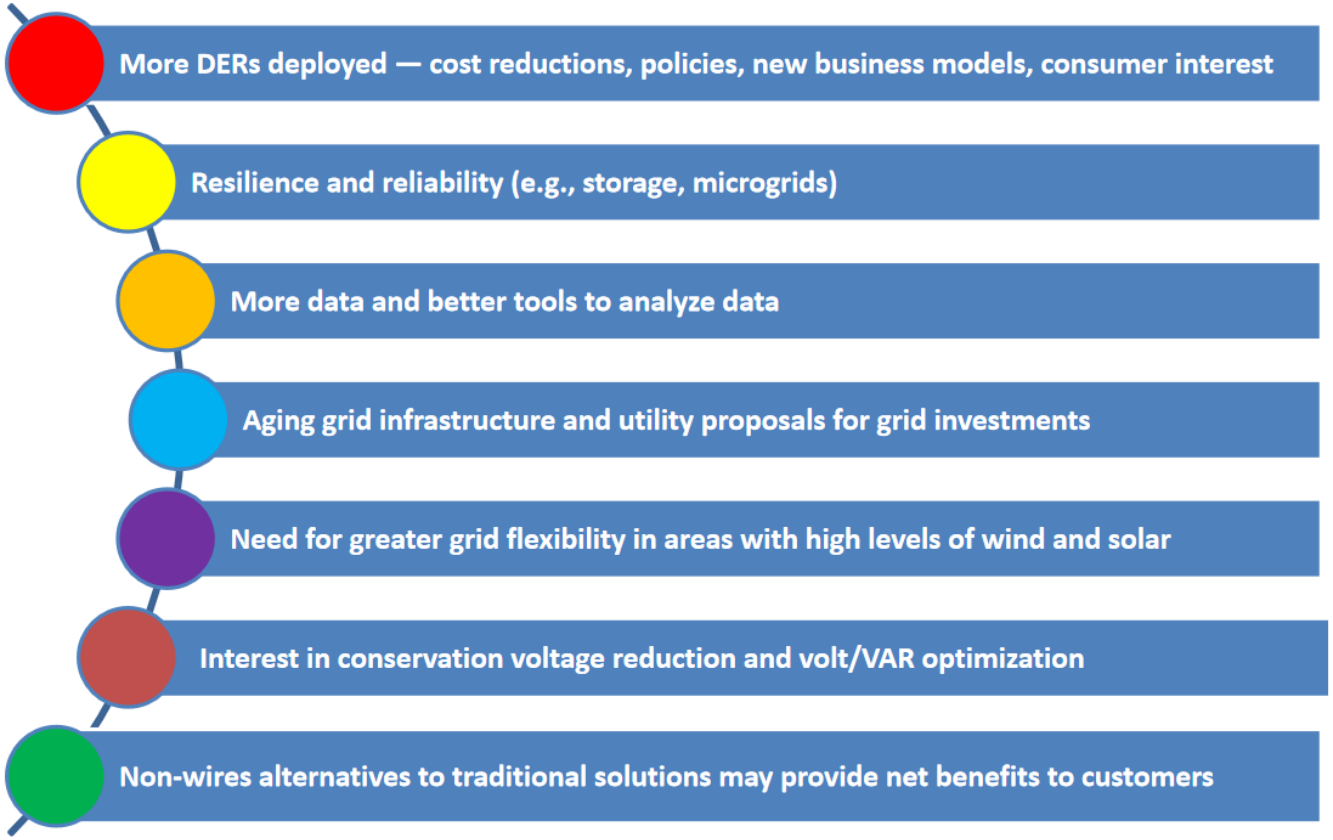

Figure source: Schwartz (2022) Integrated distribution planning overview. Available at: https://eta-publications.lbl.gov/sites/default/files/schwartz-integrated-distribution-planning-overview-20220303-fin.pptx.pdf

Discussion questions

2. What DER utility system impacts (including costs and benefits) do you want to capture in the study? (table adapted from the NSPM for DERs)

Type	Utility System Impact	Description
Distribution	Distribution Capacity	Maintaining the availability of the distribution system to transport electricity or gas safely and reliably
	Distribution System Losses	Electricity lost through the distribution system
	Distribution O&M	Operating and maintaining the distribution system
	Distribution Voltage	Maintaining voltage levels within an acceptable range to ensure that both real and reactive power production are matched with demand
General	Financial Incentives	Utility financial support provided to DER host customers or other market actors to encourage DER implementation
	Program Administration	Utility outreach to trade allies, technical training, marketing, and administration and management of DERs
	Utility Performance Incentives	Incentives offered to utilities to encourage successful, effective implementation of DER programs
	Credit and Collection	Bad debt, disconnections, reconnections
	Risk	Uncertainty including operational, technology, cybersecurity, financial, legal, reputational, and regulatory risks
	Reliability	Maintaining generation, transmission, and distribution system to withstand instability, uncontrolled events, cascading failures, or unanticipated loss of system components
	Resilience	The ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions

Discussion questions

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3. What DER non-utility system impacts (including costs and benefits) do you want to capture in the study? (table adapted from the NSPM for DERs)

Type	Impact	Description
Site Customer	Host portion of DER costs	Costs incurred to install and operate DERs net rebates or incentives
	Interconnection fees	Costs paid by host customer to interconnect DERs to the grid
	Risk	Uncertainty including price volatility, power quality, outages, and operational risk related to failure of installed DER equipment and user error; this type of risk can depend on the type of DER
	Reliability	The ability to prevent or reduce the duration of host customer outages
	Resilience	The ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions
	Tax incentives	Federal, state, and local tax incentives provided to host customers to defray the costs of some DERs
	Non-energy Impacts (NEIs)	Benefits and costs of DERs that are separate from energy-related impacts
Societal	Resilience	Resilience impacts beyond those experienced by utilities or host customers
	GHG Emissions	GHG emissions created by fossil-fueled energy resources
	Other Environmental	Other air emissions, solid waste, land, water, and other environmental impacts
	Economic and Jobs	Incremental economic development and job impacts
	Public Health	Health impacts, medical costs, and productivity affected by health
	Low Income/Vulnerable Populations: Society	Poverty alleviation, environmental justice, reduced home foreclosures, etc.
	Energy Security	Energy imports and energy independence

Contact information

- Additional considerations for your study
  - What are the dynamic behaviors to capture (e.g., how incentives change DER adoption and operations)?
  - What are the data requirements and what information do you need to ask the utility for?
  - Customer- vs. utility-owned DERs? Or, third-party vs. utility investment in DERs?

- We welcome follow-up and questions
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