

Benchmarking Soft Costs of Utility Scale Energy Storage

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Strategic Pathway: Grow Grid Capacity
Project start and finish: FY25-26

PROBLEM

Efforts associated with factors like permitting, finance, and interconnection can increase the cost of grid storage and delay project timelines. Lack of clarity around these costs also make it difficult to understand how regulatory reforms impact projects in the field. Further:

- There is a lack of accessible and trusted data for industry
- By understanding cost drivers, regulators can adapt processes to make it easier and cheaper to deploy

APPROACH

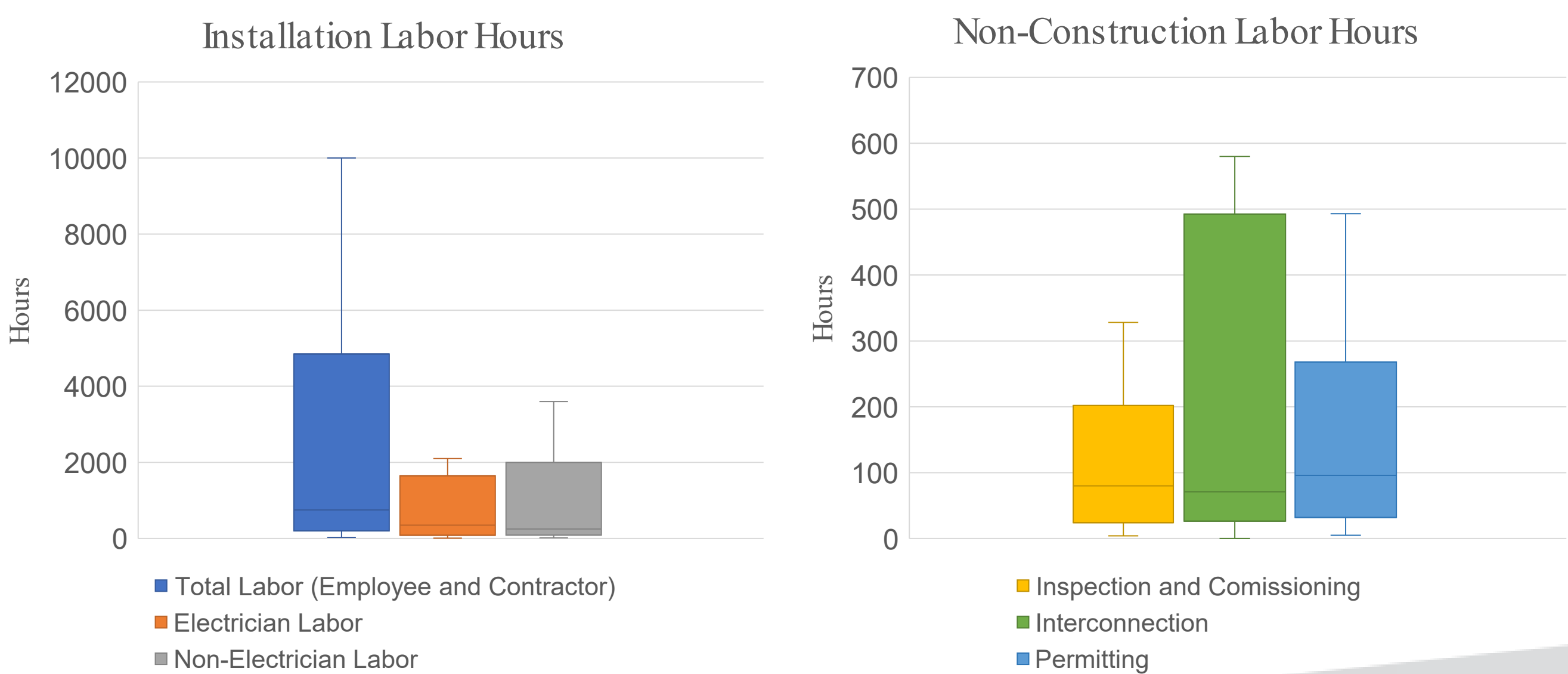
The PNNL team partnered with GuidePoint, a market and analytics firm, to design and administer a survey to energy storage developers.

- Developers were screened based on their footprint and experience installing storage. A total of **28 complete responses** were received.
- Respondents provided an overview of the projects they developed in 2025 with line-item cost estimates of soft costs, and labor hours.
- Reported costs included those associated with **contracting, installation labor, permitting, inspection, interconnection, design, commissioning, customer acquisition and applying for incentives.**
- We also collected metrics related to installation timelines.
- PNNL also conducted follow up interviews with a subset of respondents to clarify any ambiguous answers or obtain additional information.

RESULTS

Developers reported variable costs associated with balance of systems activities:

- Pre-project activities including customer acquisition, contracting and design accounted for **roughly a third of project costs**
- Labor accounted for a much smaller percentage of project costs

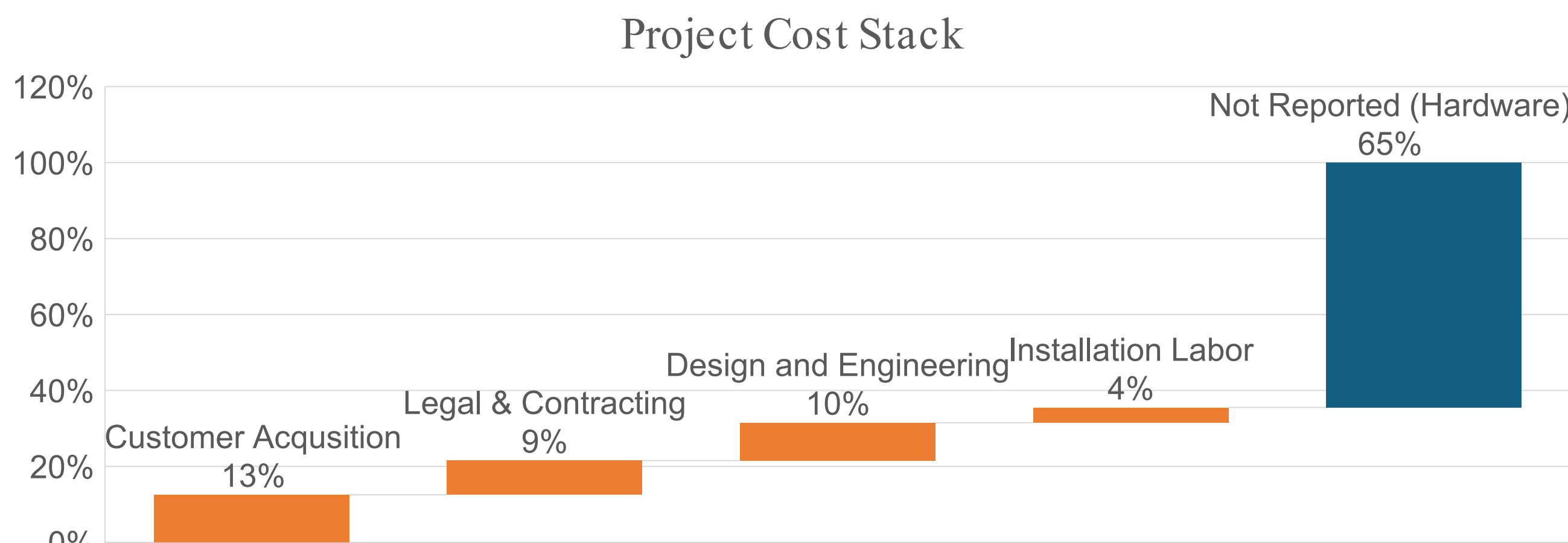


RESULTS CON'T

Difficulties with permitting and interconnection were a common problem

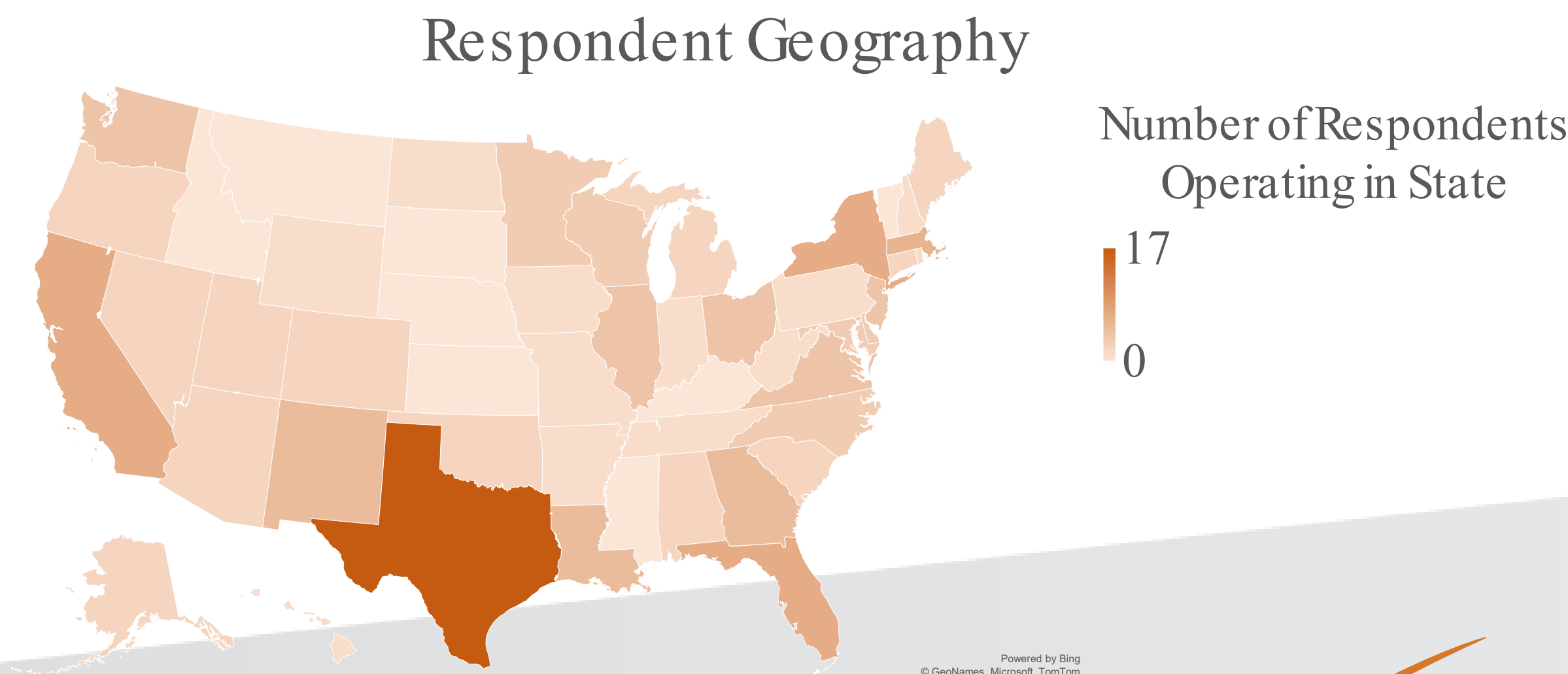
- The average developer assessed **12 sites** before going forward with a permit
- Over **30% of project interconnection applications** required substantive revisions
- Developers on average had to cancel **one project for every 5 projects built**
- Roughly **20% of project permit applications** included unusual requirements

	Percent of Total Costs			\$/kWh		
	Average	Median	Std. Deviation	Average	Median	Std. Deviation
Customer Acquisition	22%	13%	22%	\$68.27	\$8.90	\$154.81
Legal & Contracting	10%	9%	8%	\$22.45	\$6.80	\$45.61
Design & Engineering	15%	10%	12%	\$37.73	\$15.00	\$60.00



CONCLUSIONS & IMPACT

- Soft costs accounted for an average of **35% of total project costs**
- Respondents reported significant challenges associated with permitting and interconnection
- The average project required **300 days of development** between filing a permit and COD
- Developers reported numerous project cancellations
- High standard deviations indicate **substantial cost variations** across projects, regions and developers
- While hardware costs account for most system costs, soft costs remain significant, and have an outsized impact on project viability



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