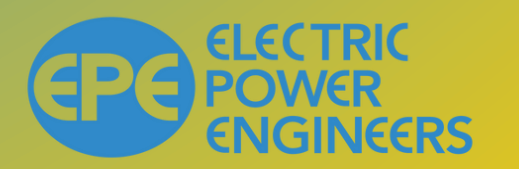


DER Value for Integrated Planning

Julieta Giraldez, Director Integrated Planning Electric Power Engineers

ESIG 2025 Fall Technical Workshop

Philadelphia, October 28th 2025



Delivering Energy Intelligence



1. Everyone looking at the same map!

2. Magnifying glass!

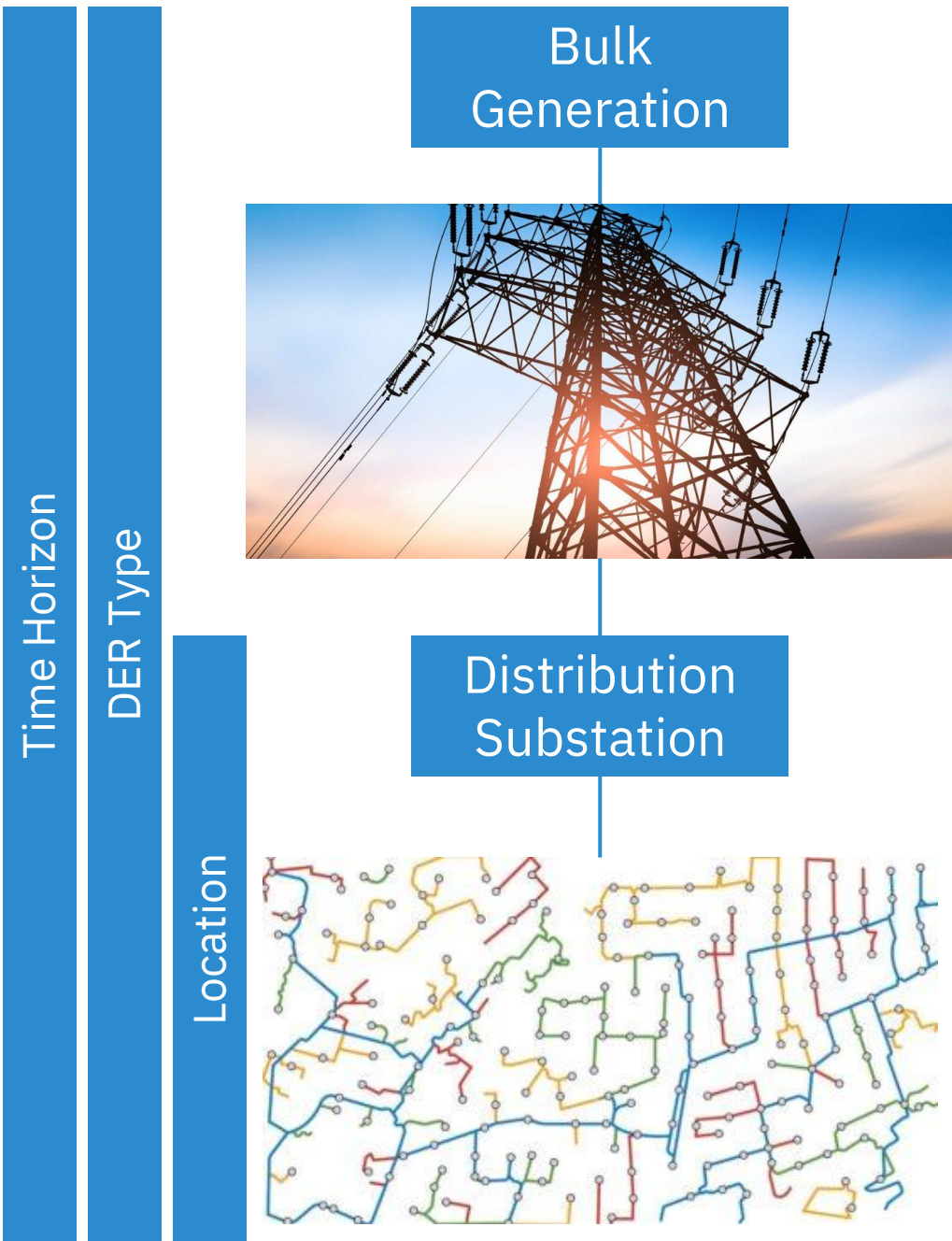
DER Value for Integrated Planning

Julieta Giraldez, Director Integrated Planning Electric Power Engineers

ESIG 2025 Fall Technical Workshop

Philadelphia, October 28th 2025

Locational Value stack for DERs



Value Stack: Generation

Value Stack: Transmission

*Aggregated Value Stack:
Transmission + Generation*

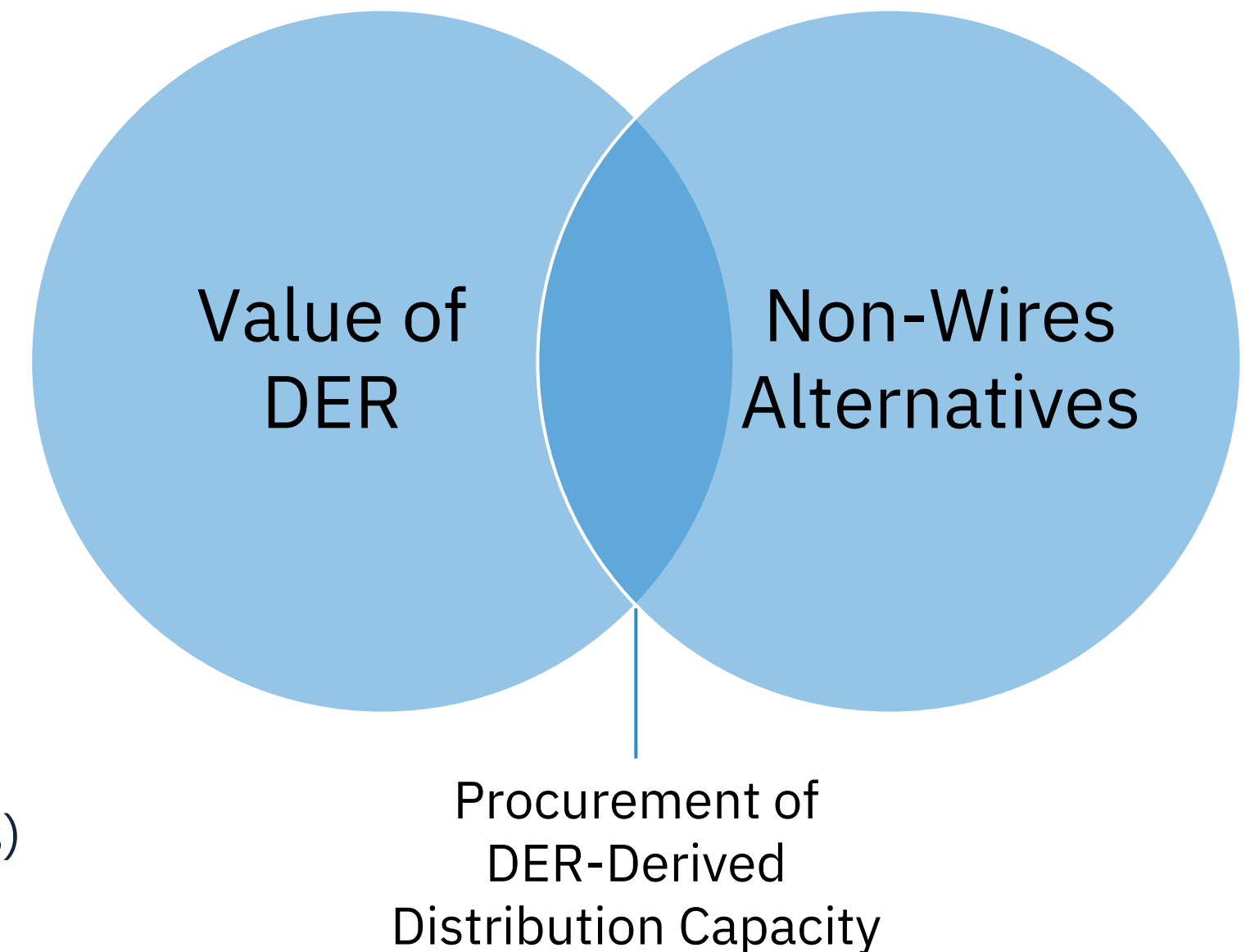
*Locational Value Stack:
Distribution*

Type	Utility System Impact	Spatial Resolution	Temporal Resolution	Approach
Distribution	Deferred Investment (Conductors)	Dnodes	Peak	Powerflow+Lookup
	Deferred Investment (Voltage Regulation)	Dnodes	Peak	Powerflow+Lookup
	Losses	Dnodes	Timeseries	Powerflow
	O&M	Aggregated Dnodes	Peak	Utility
	Reliability Costs	Aggregated Dnodes	Annual	Qualitative
	Resiliency Costs	Aggregated Dnodes	Annual	Qualitative
Transmission	Deferred Investment	SS Nodes	Peak	Dominion+Lookup
	Transmission Losses	SS Nodes	Annual	ISO
	O&M	SS Nodes	Annual	Utility
	Congestion	SS Nodes	Annual	ISO
Generation	Avoided Energy	Area	Timeseries	ISO
	Avoided Fuel Hedge	Area	Timeseries	Generation Profiles
	Avoided Capacity and Reserves	Area	Timeseries	Generation Profiles
	Avoided Ancillary Services	Area	Timeseries	Generation Profiles
	Avoided Renewable Procurement	Area	Timeseries	Generation Profiles
	Market Price Reduction	Area	Timeseries	Generation Profiles + ISO
Environmental/Societal	Monetized Environmental/Health	Area	Annual	GHG Emission Factors
	Security Enhancement/Risk	Area	Annual	Qualitative
	Societal	Area	Annual	Qualitative

Value of DER – Concept Overview

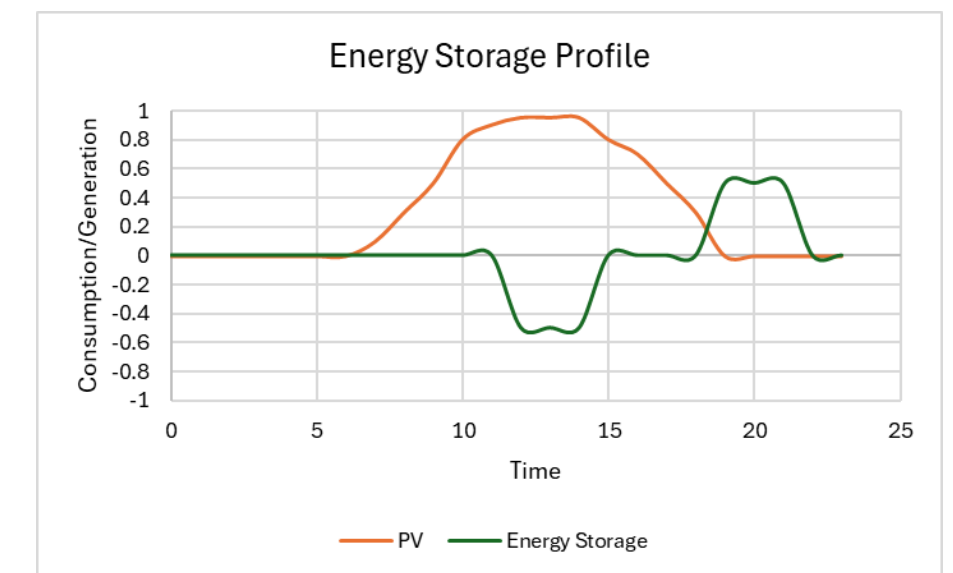
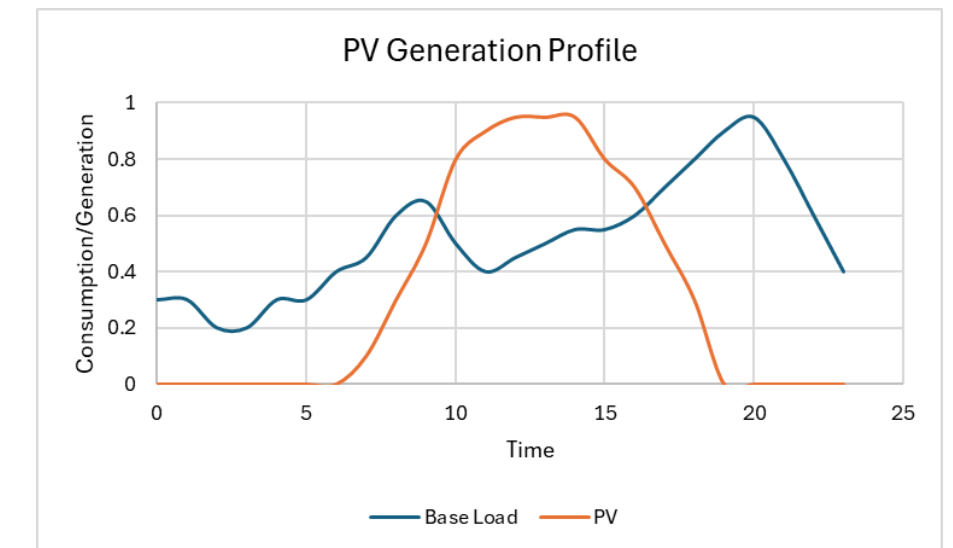
What makes DERs more valuable? Imagine you are a distribution planning engineer AND you get to control the size, location, and type of DER

- **Where do you want to put it?**
 - Areas with load capacity needs, especially where:
 - DER has higher degree of reduction of peak load (e.g., solar)
 - The need occurs relatively sooner in the forecast
 - There is high confidence that load growth will occur
 - The traditional upgrade is more expensive
 - The traditional upgrade is to a relatively healthy asset
 - Areas that need more hosting capacity (applicable for BESS / EVs)



DER Types w/ Operating Profiles

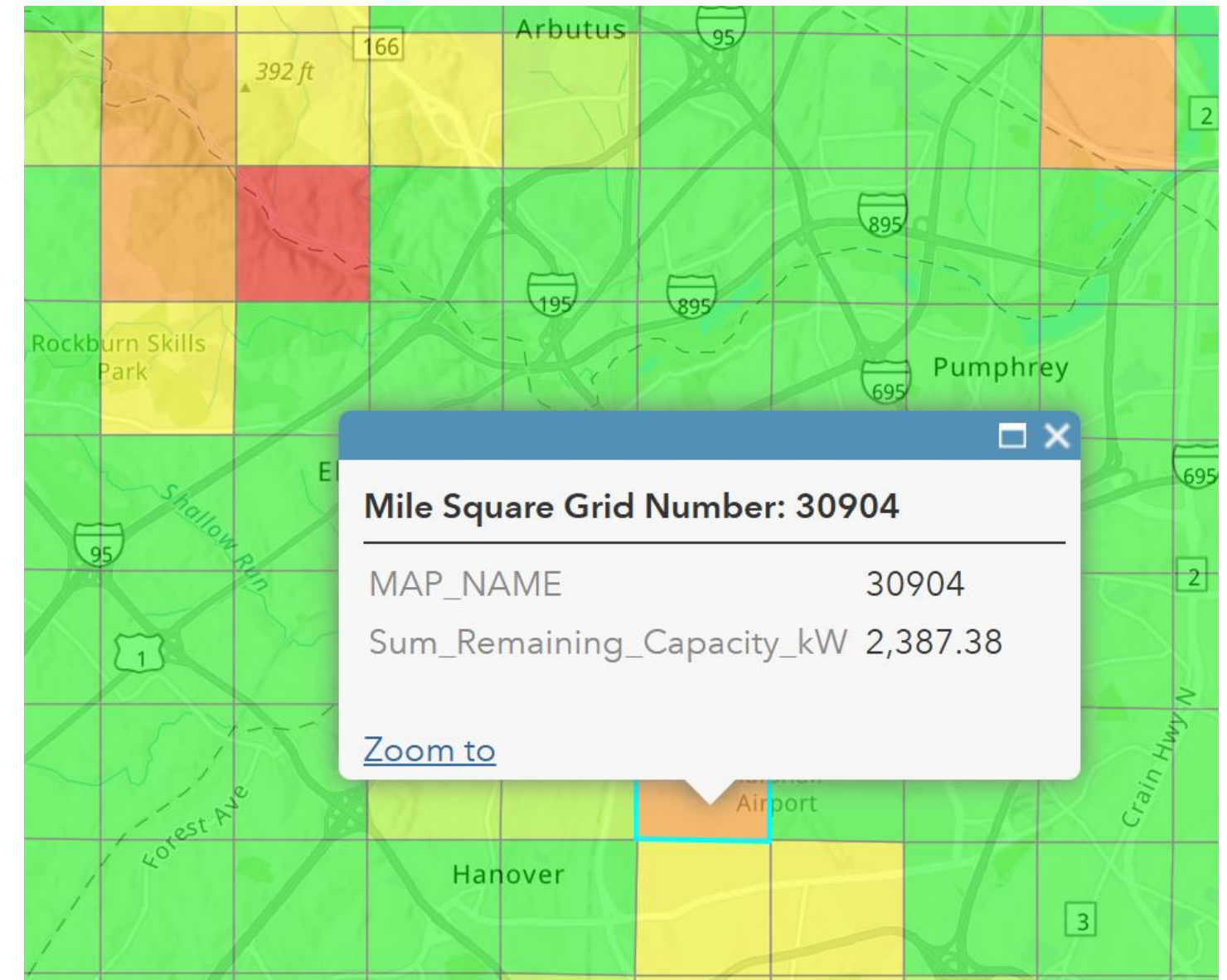
DER Types	Operating Profile
Solar	Location specific profiles can be generated using the NRELs TMY irradiation data and PV Watts calculator. Variations in generation with weather and time will be captured as a constraints for value calculations
Energy Storage	Storage operating profiles can be optimized based on the self consumption of on-site generation, net-metering criteria and TOU & market price variations.
Flexible Load	Flexibility in the load will be estimated based on the utility's DR program experience.
Electric Vehicles	The flexibility in the charging rate can be estimated based on typical L2 charger ratings, average dwell times and typical charging requirements of Electric vehicles.



VDER - Input Data

Align with Existing Practices and Available Data

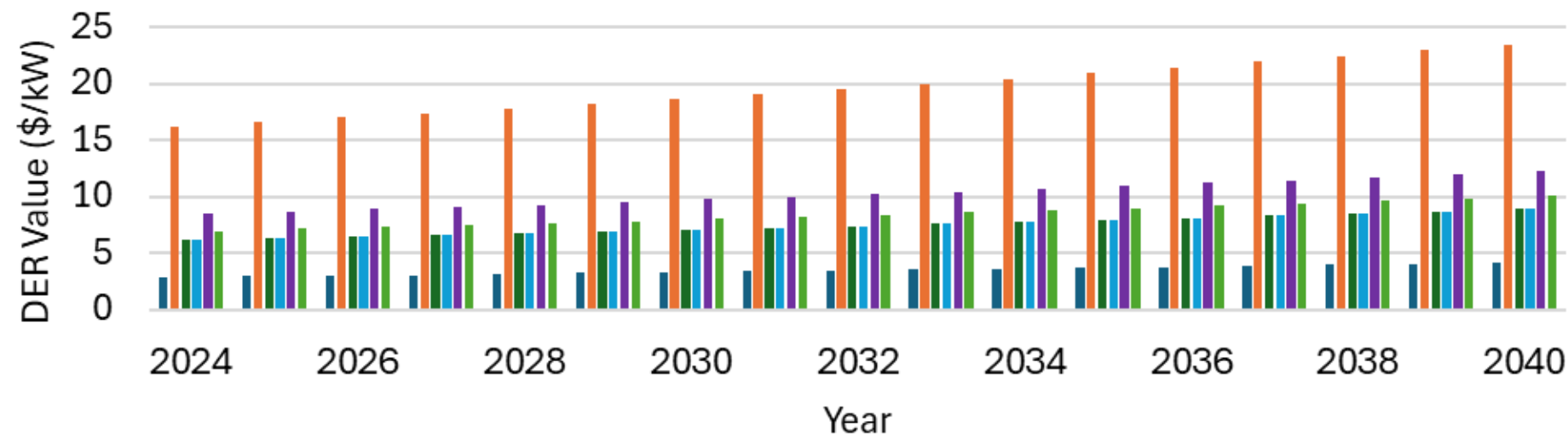
- Leverage Existing Planning Processes to Align Needs, Minimize Duplicative Efforts
 - Load Growth Forecasts
 - Substation Equipment Loading (SCADA)
 - Circuit Equipment Loading -> Existing Power Flow Models, AMI
 - Voltage Support Areas -> Existing Power Flow Models, AMI
 - Upgrade Project Cost Estimates



Sample Results

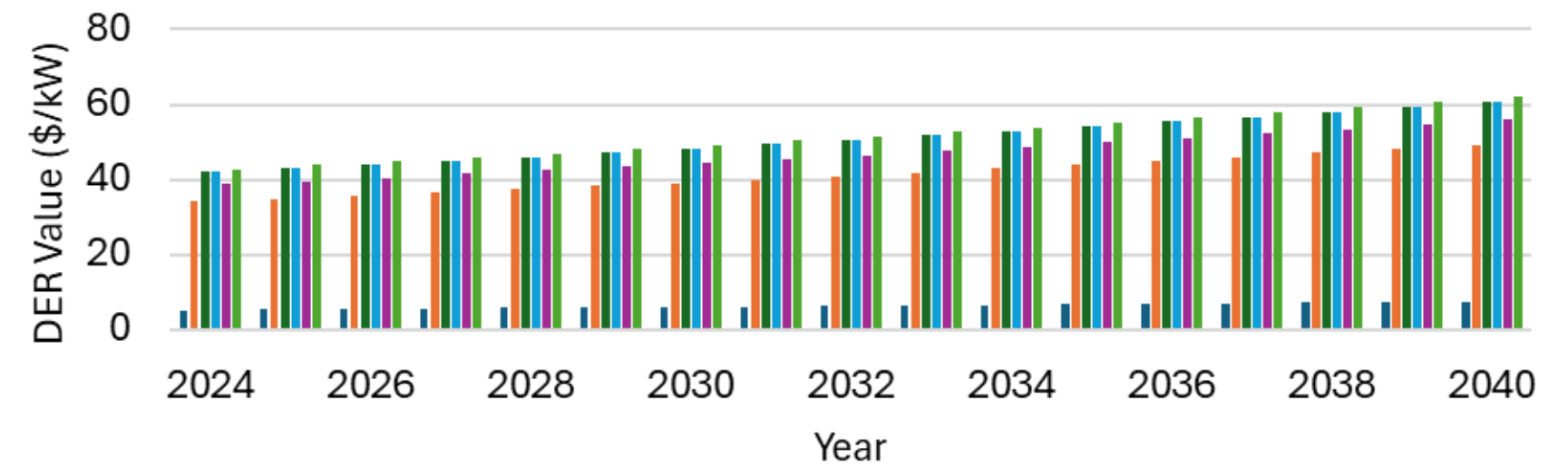
Avoided Transmission, Congestion and Generation Costs

Valuestack: Avoided Congestion Cost



■ BTM_BESS ■ FTM_BESS ■ BTM_PV ■ FTM_PV ■ FTM_PV_BESS ■ BTM_PV_BESS

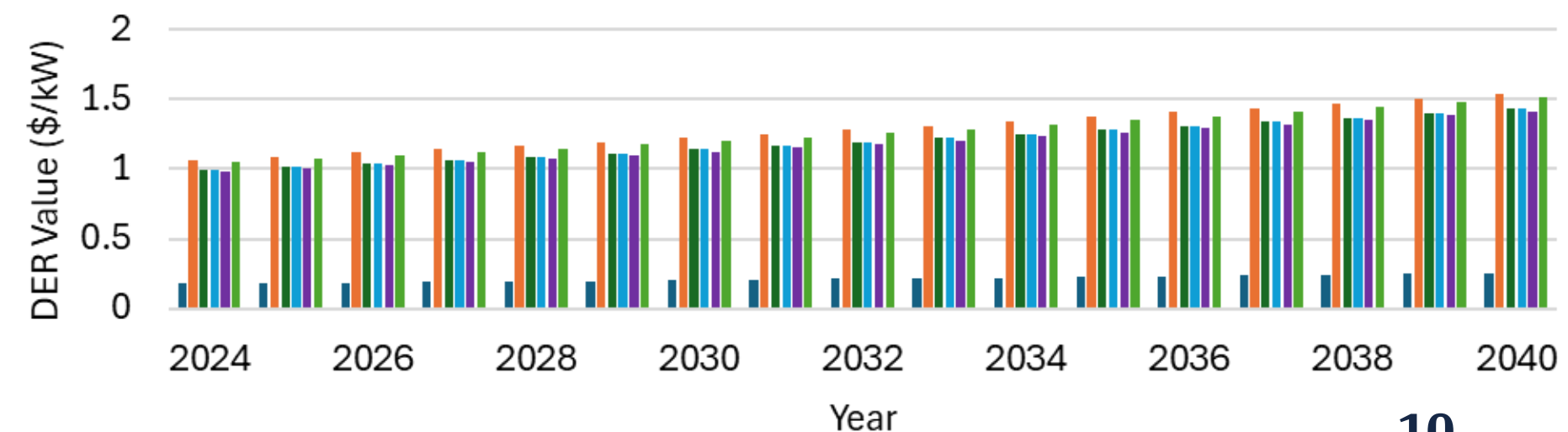
Value Stack: Avoided Generation



■ BTM_BESS ■ FTM_BESS ■ BTM_PV ■ FTM_PV ■ FTM_PV_BESS ■ BTM_PV_BESS

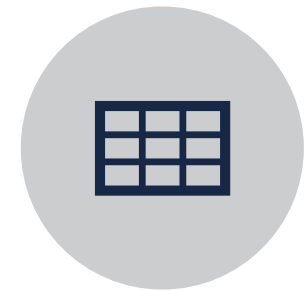
- Avoided costs are calculated based on the marginal cost components at Substation location and use case specific DER profiles.
- Assumed inflation for the forecasted years: 2%

Valuestack: Avoided Transmission Losses



■ BTM_BESS ■ FTM_BESS ■ BTM_PV ■ FTM_PV ■ FTM_PV_BESS ■ BTM_PV_BESS

What Success Looks Like



**Shared, reconciled
data across silos**



**Transparent and
coordinated
investment**



**Valued flexibility
and affordability**



**Customers as
partners**



**Everyone looking at the same
map—like our kitten team.**

Thank you!

jgiraldez@epeconsulting.com