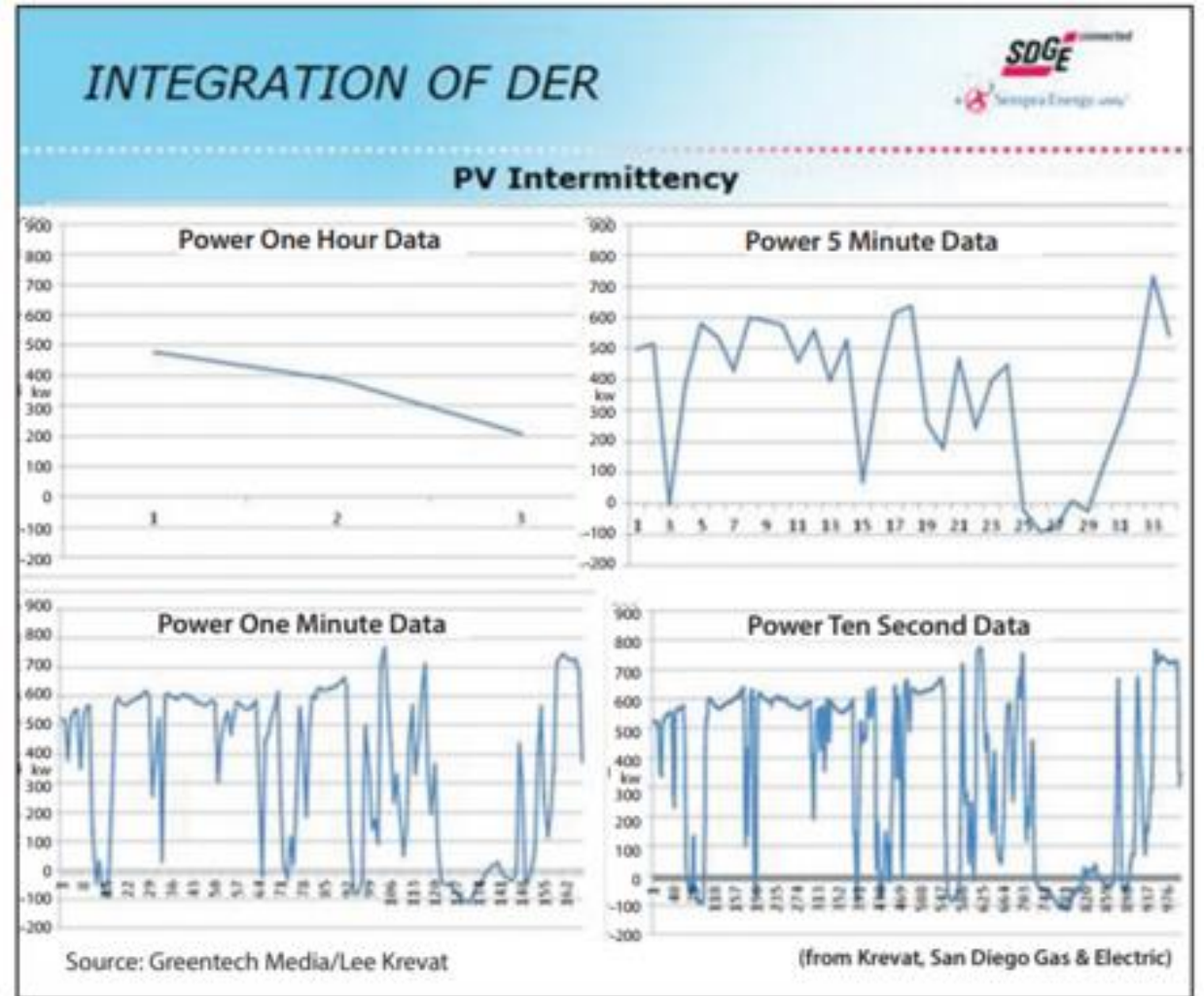


Hosting Capacity Overview

PURPA Informational/Educational Workshop
Missouri Public Service Commission

Chris Villarreal
Plugged In Strategies
April 6, 2021

What can data tell us about the grid?

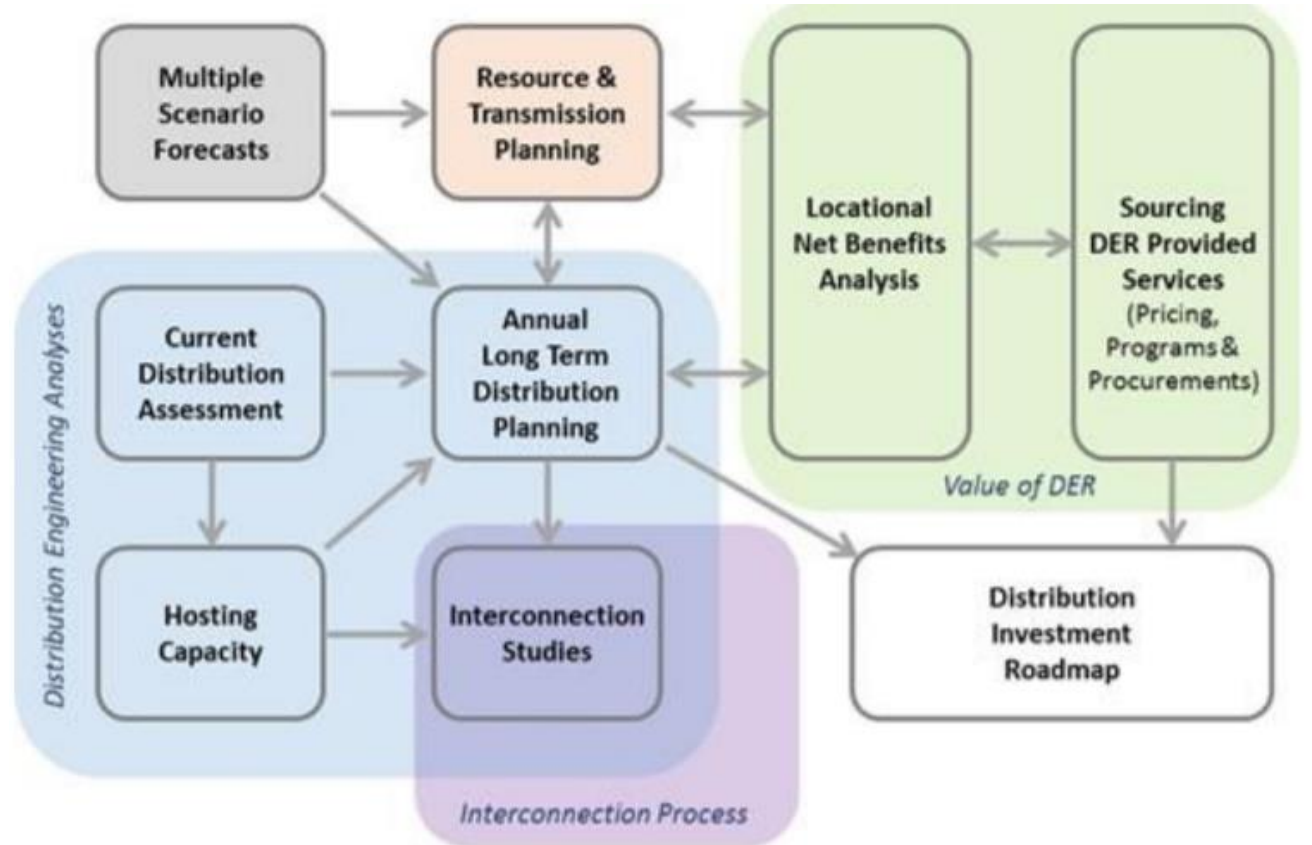


What is Hosting Capacity?

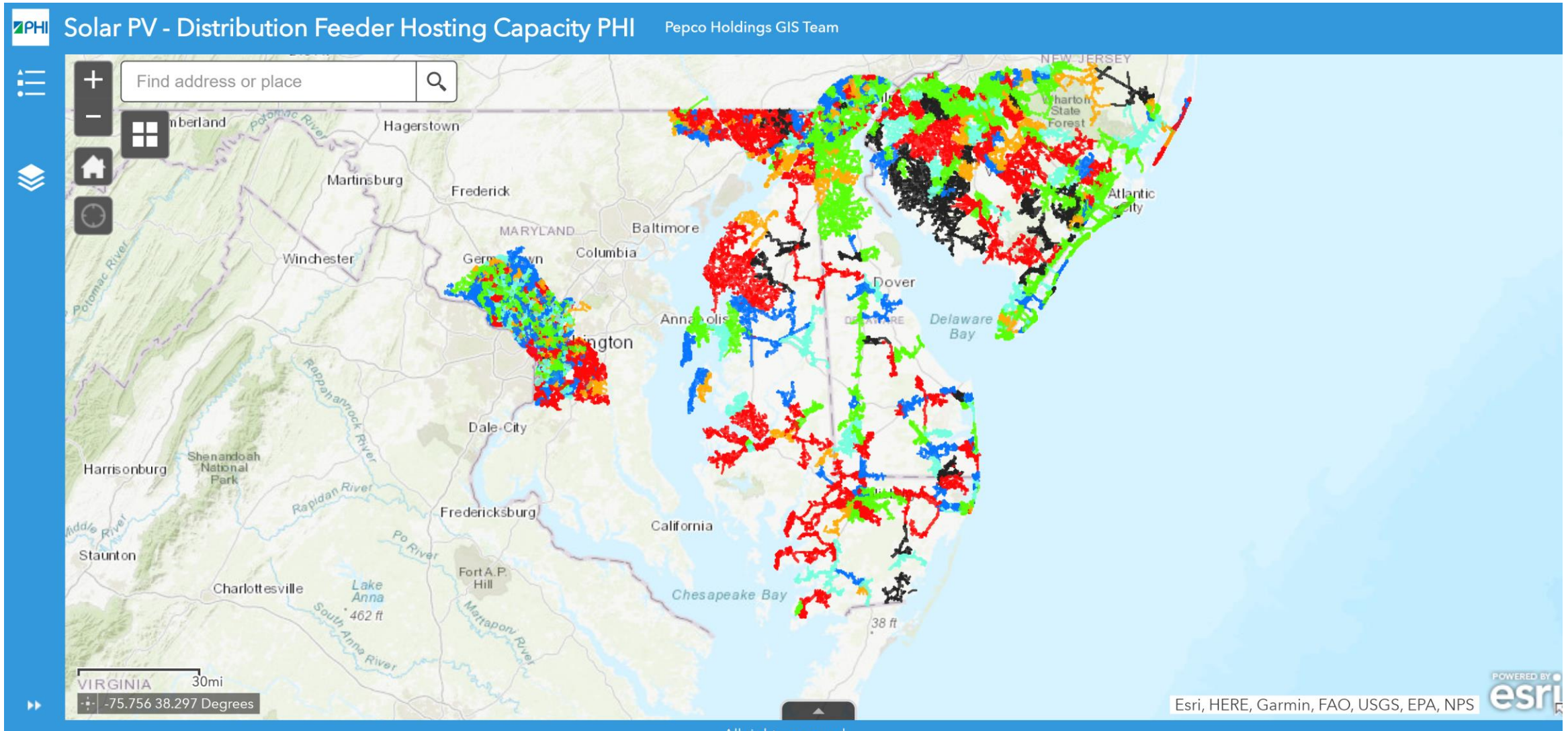
- EPRI: Hosting Capacity is the amount of DER that can be accommodated without adversely impacting power quality or reliability under current configurations and without requiring infrastructure upgrades.
- Baseline determination of DER the existing distribution grid can safely and reliably accommodate without new infrastructure
 - Hosting capacity methods quantify the engineering factors that increasing DER penetration introduces on the grid within three principal constraints: thermal, voltage/power quality, and protection limits.
- Hosting Capacity is
 - Location dependent
 - Feeder specific
 - Time varying
- Hosting capacity considers
 - Voltage violations
 - Thermal overloads
 - Protection mis-operation
 - Safety/reliability/power quality

Hosting Capacity Uses

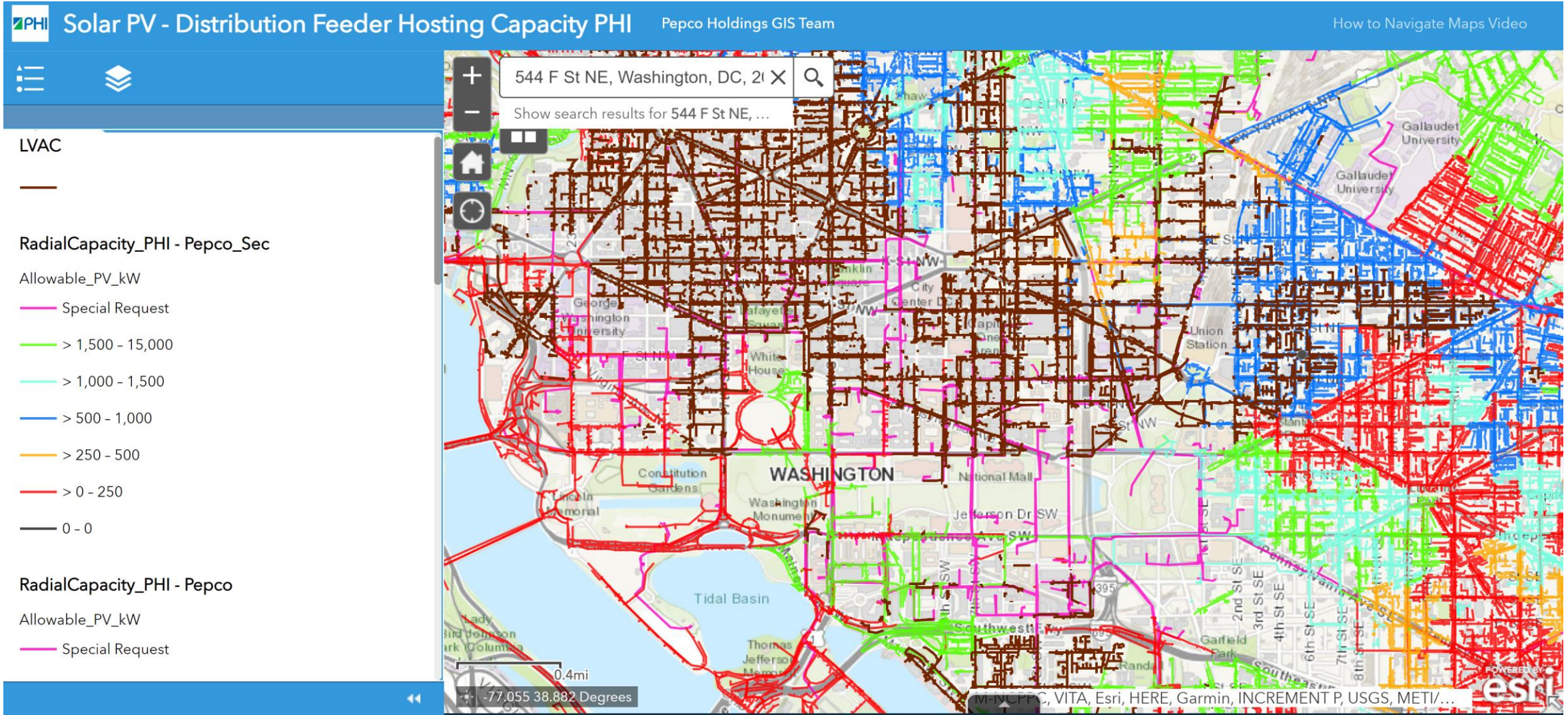
- Indication of distribution feeder capacity for DER
- Streamlining interconnection studies
- Annual long-term distribution planning.



Example of Hosting Capacity Heat Map- PEPCO



Closer Look



Example Street View

PHI Solar PV - Distribution Feeder Hosting Capacity PHI Pepco Holdings GIS Team How to Navigate Maps Video

544 F St NE, Washington, DC, 20002

Show search results for 544 F St NE, ...

200ft

-77.001 38.897 Degrees

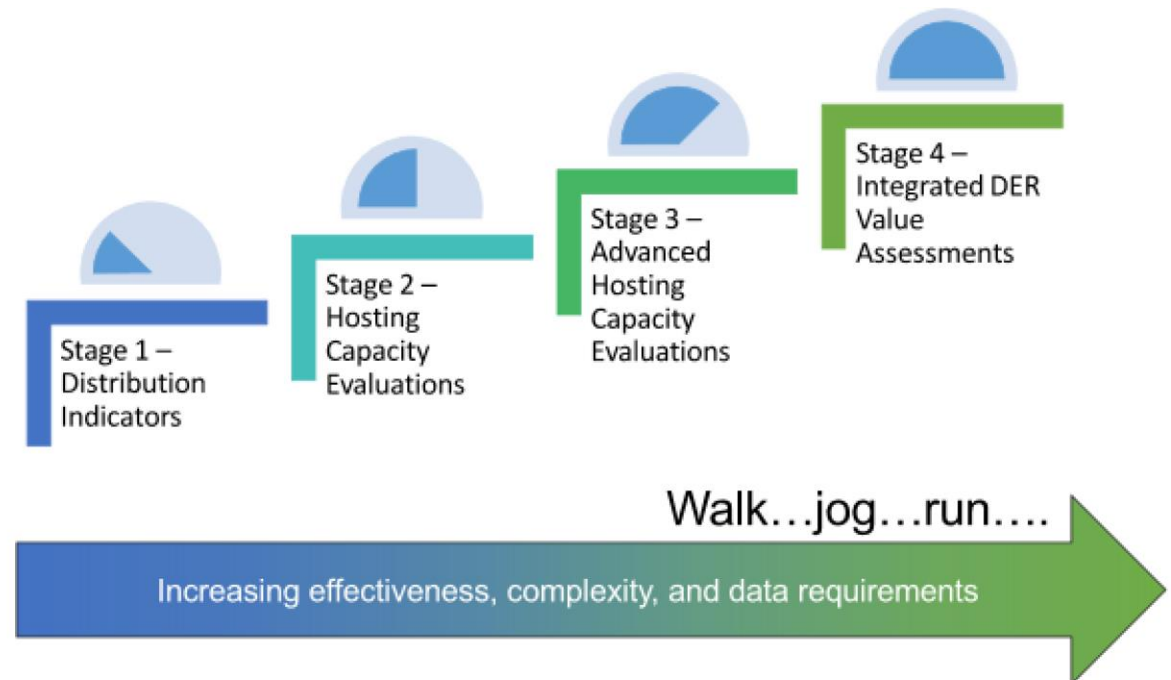
DCGIS, M-NCPPC, VITA, Esri, HERE, Garmin, INCREMENT P, USGS, EPA, USDA

Options Filter by map extent Zoom to Clear selection Refresh

GISFEEDERID	FeederID	Allowable_PV_kW	Max_Size_Restricted	OpVolt	Total_Active_Gen	Total_Pending_Gen	Total_Gen_kW	NAME	Feeder_Large_Gen	Transformer_Large_Gen
14786	14786	733.10	" " "	12-13kV	616.56	1,431.72	2,048.28	Pepco	1,350.00	28,350.00
14788	14788	526.20	" " "	12-13kV	221.21	35.74	256.95	Pepco	3,000.00	30,000.00

Hosting Capacity takes time

- Need to understand capabilities of system
- Data sources
- Methodologies
- Needs
- Use Cases can help
 - Interconnection
 - Distribution Planning
 - DER Value

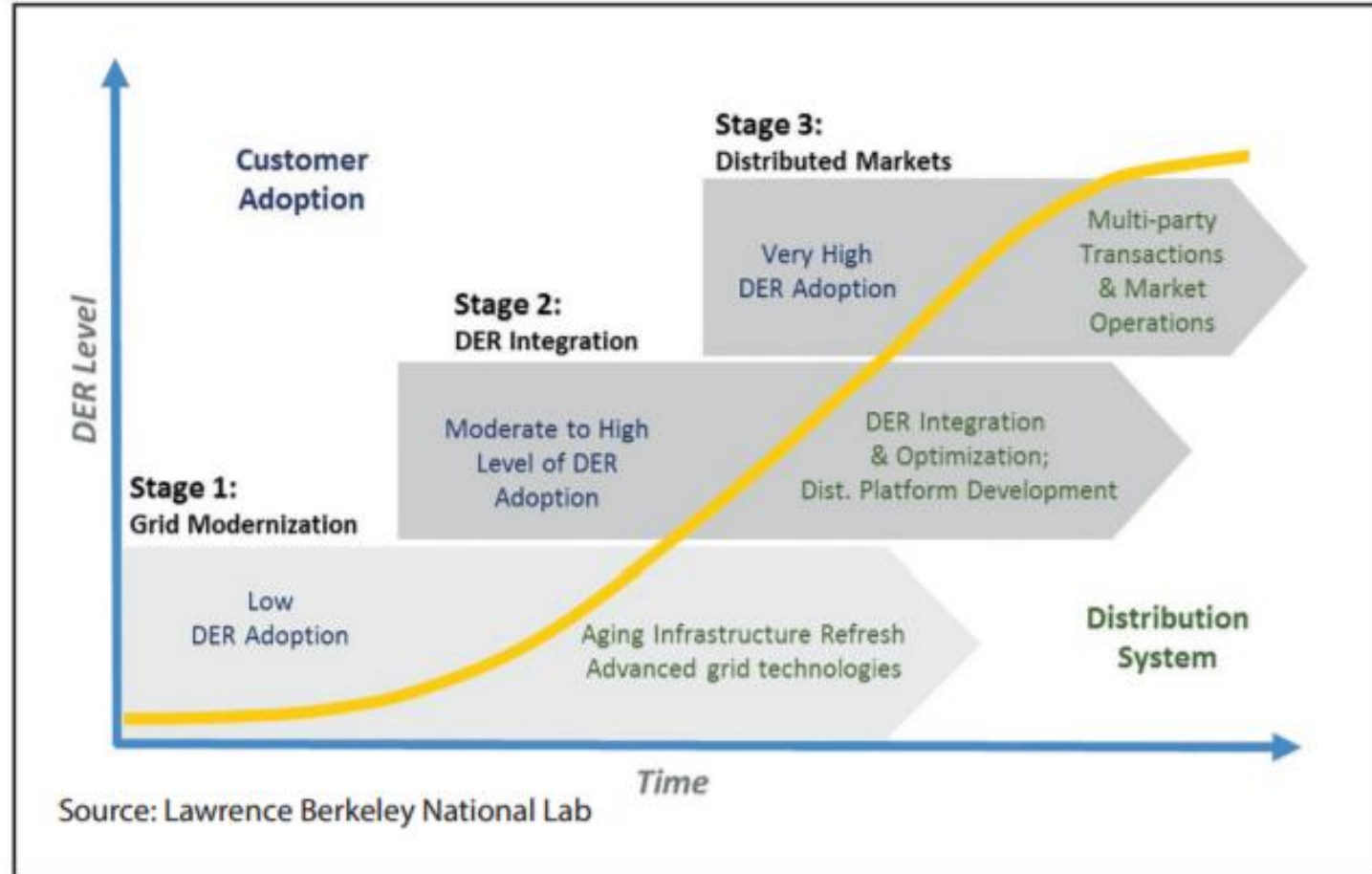


Defining a Roadmap for Successful Implementation of a Hosting Capacity Method for New York State, EPRI, Palo Alto, CA: 2016. 3002008848

Still a lot to do and understand

- DER adoption rates
- Impacts will be localized, circuit-by-circuit
- Hosting Capacity will become increasingly important
- Hosting Capacity will also become increasingly complicated
- DER behavior driven by customer actions, technology, and incentives/disincentives
 - E.g., 2222 implementation, rate design, NEM/NEM2.0, locational net benefits
- Better understanding of system planning, how DER impacts operations, and role of hosting capacity to inform market, customers, developers, and utilities
 - Non-wires alternatives
 - Interconnection
- Alignment with other utility functions
 - GIS accuracy

All Part of the Process



Questions?

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