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Part 3- Distribution System Planning – State Examples by Topic

JULIET HOMER, P.E., PMP

Pacific Northwest National Laboratory

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Topics I'll cover

- Locational value
- Standardization of methodologies
- Reporting on poor performing circuits
- Aligning processes

Locational Value

- Q: What's the value of rooftop solar?
- A: It depends
- Value is context dependent
- Solar could be valuable in one location and expensive in another
- California and New York are actively engaged in looking at this
- California
  - In Distribution Resource Plans, CA utilities required to define criteria for then identifying specific locational values for DERs.
- New York's Value of DER (VDER) proceeding– provides a framework for valuing and developing compensation methodologies for DERs.
  - Value Stack tariff is a compensation method that takes into account previously unquantified values, including locational and environmental benefits.

California Locational Value

- Locational Net Benefits Analysis (LNBA) working group established
- Commission directed utilities to use a consistent two part methodology:
  - System-level avoided costs - estimates system-level avoided costs for a given DER solution calculated through E3's DER Avoided Cost Calculator

    +
  - Project deferral benefits - calculates value of deferring specific capital project

    =

  Total Achievable Avoided Cost for a given DER solution at a specific location
- Demonstration projects underway to test tools for locational net benefits analysis
- Completion of final LNBA models expected in mid-2018

CA LNBA Use Cases

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- Two LNBA use cases agreed to by working group and approved:
  1. Public Tool and Heat Map to enable customers and developers to identify optimal locations for installing DERs
  2. Using LNBA for prioritizing candidate distribution deferral opportunities for the Distribution Investment Deferral Framework

  Plus a third:

  3. LNBA to serve a cost-effectiveness use and update the DER Avoided Cost tool
- Refinement recommended by the Commission in June 2017, included:
  - Methods for valuing location-specific grid services provided by smart inverters
  - Methods for evaluating the effect on avoided cost of DER working in concert within the same substation footprint
  - Improved heat map and spreadsheet tool
  - Increasing granularity in avoided-cost values
  - New subgroup to develop methodologies for nonzero location-specific transmission costs (with CAISO)

New York Locational Value

- New York Value of DER proceeding (VDER) - provide incentives reflecting the locational value of DER
- In short term, intended to replace net metering for community solar PV (up to 5 MW) - will eventually be applied to all DERs across the grid
- Approach: Identifying, quantifying, and compensating for:
  - Demand Reduction Value (DRV) - Applies to all projects in a utility's territory and is based on the utility's average cost of service.
    - Utilities fix the DRV for three years from time of interconnection and update it every three years
  - Locational System Relief Value (LSRV) - Specific to projects that, based on location and characteristics, contribute to meeting a particular utility need and provide a specific, higher value to the distribution system.
    - LSRV is recalculated as needed but at least every 3 years and fixed for 10 years
- Utilities were required to include in implementation proposals for the identification of, compensation for, and MW caps for LSRV zones.

New York Locational Value, cont.

- Utilities determined threshold criteria for determining LSRV zones, and identified initial areas on its system meeting these criteria
  - Example 1: Con Edison threshold – LSRV areas are those where projected energy use in 2021 reaches or exceeds:
    - 98% of current capability in sub-transmission lines or area stations or
    - 90% of the current capability in distribution network areas.
    - Applying criteria -**19%** of Con Edison service territory qualify as LSRV zones
  - Example 2: National Grid threshold - scaled loads on all distribution substations to 2020 and then screened against planning ratings to identify potential loadings above those ratings.
    - Applying criteria - **16%** of National Grid substations were identified as LSRV areas
- Marginal cost of service (MCOS) studies are the basis for LSRV and DRV compensation calculations
- Goals of VDER phase 2 include improve MCOS studies and LSRV methodology and standardize them to the extent possible
  - However, “symmetry across all utilities in all aspects of the distribution planning methods is not realistic or necessarily desirable.”

Standardization of Methods - Examples

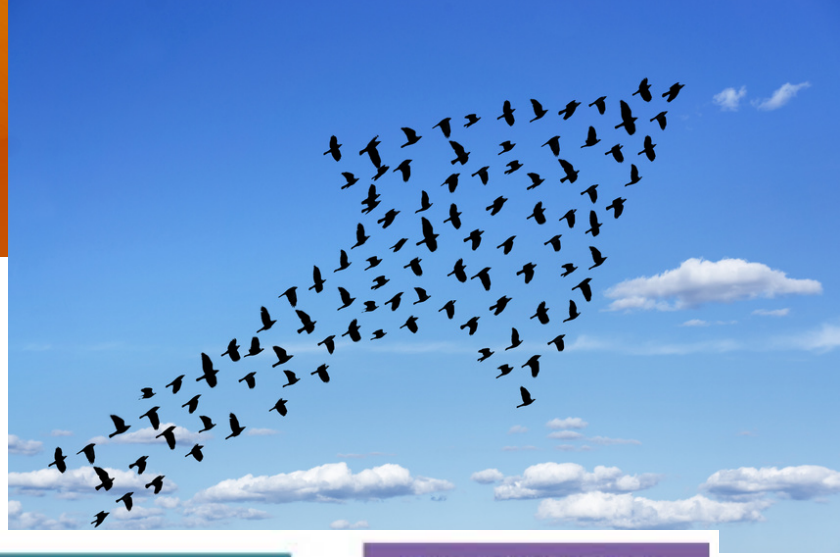
- New York
  - MCOS and LSRV methodology (future)
  - Distributed System Implementation Plans (DSIPs)
    - Step 1: Utilities individually filed Initial DSIPs
      - Identify immediate changes that can be made to support state energy goals,
      - Provide info on current five-year capital investment plans
    - Step 2: Utilities jointly filed Supplemental DSIPs
      - Addressing tools, processes and protocols that can be jointly developed or under shared standards
    - Benefit-Cost Analysis

- California
  - Workshop process has been used to develop standard tools and methodologies related to:
    - hosting capacity analysis
    - locational benefits analysis
    - DER growth scenarios
    - load forecasts

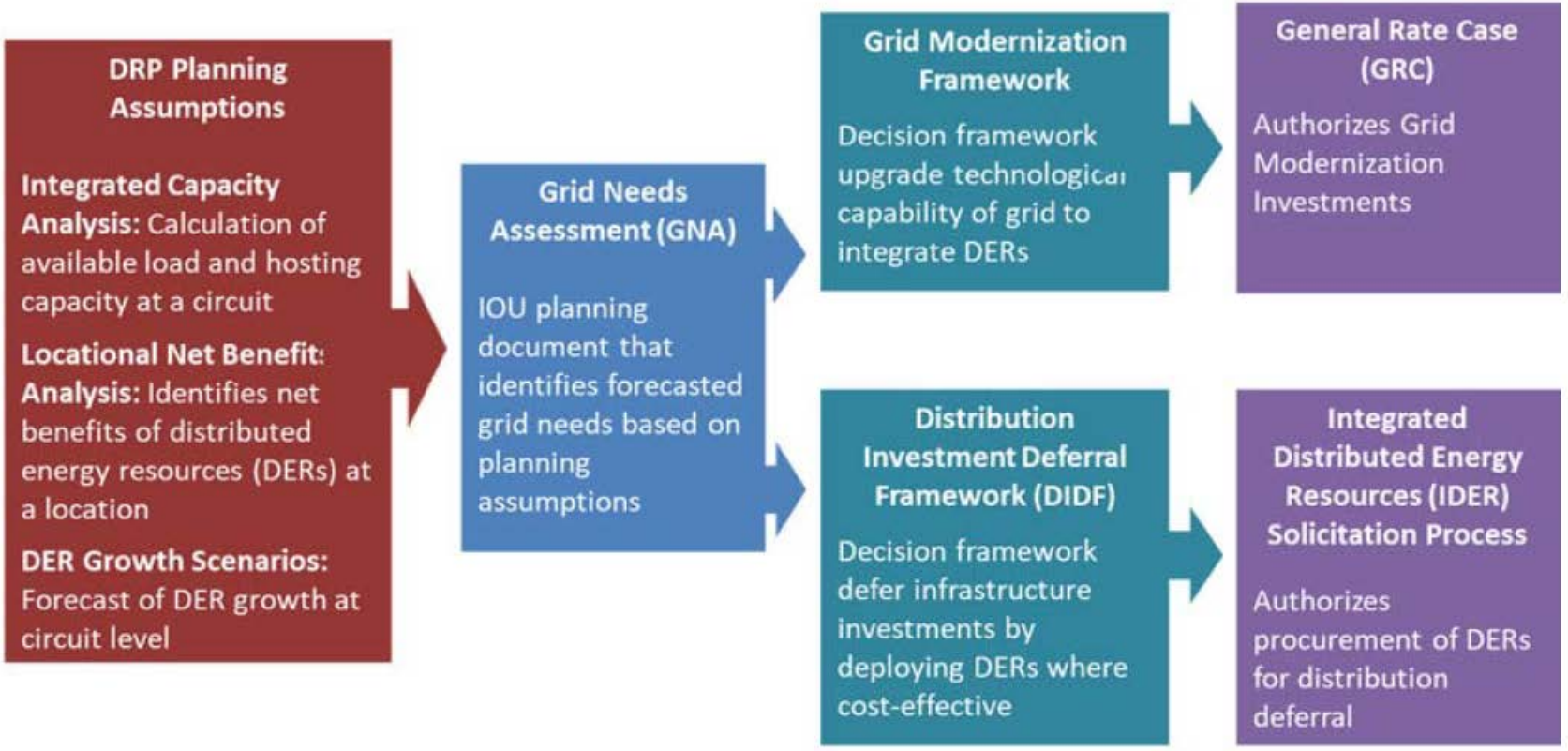
Reporting on Poor Performing Circuits

- Florida, Illinois, Ohio, Pennsylvania, and Rhode Island require utilities to report on the worst-performing feeders
- Illinois requires annual reporting with:
  - reliability performance,
  - 3-year plan for future investments
  - Identify future potential reliability challenges
- Ohio requires yearly reports on distribution systems including reporting on worst-performing circuits
- Pennsylvania utilities must report quarterly on worst-performing circuits and propose investments

Aligning processes



- CA, HI, MN, RI and WA are making strides in aligning planning processes
- CA's Distribution Resource Planning process links multiple activities



Source: *Workshop on Integrated Distributed Energy Resources. Energy Division Presentation.* July 10, 2017. http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442455025

From Hawaii Integrated Grid Planning – March 2018 Report

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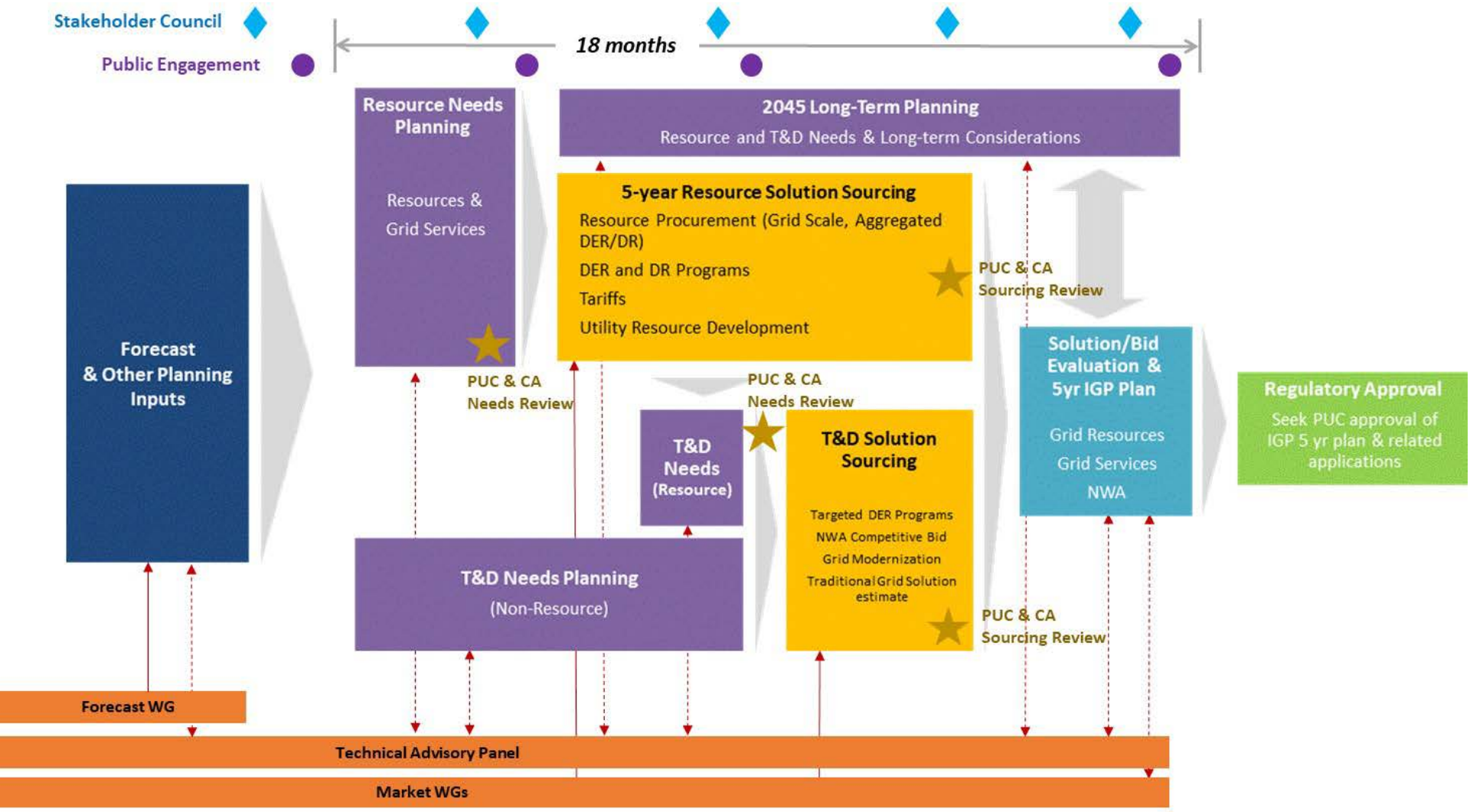
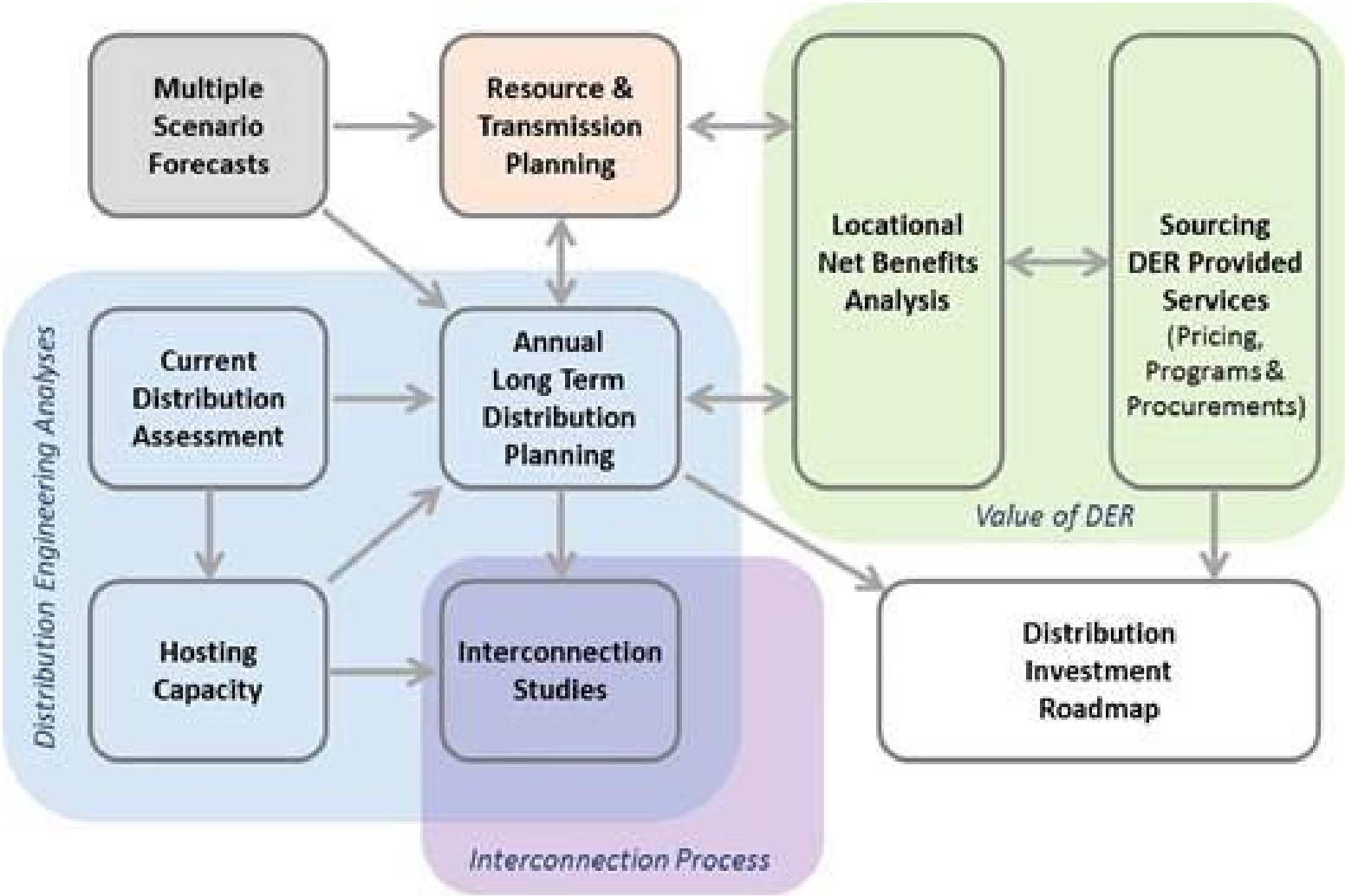


Integrated Distribution System Planning



From ICF International. 2016. *Integrated Distribution Planning*. For the Minnesota Public Utilities Commission. August.

Training for States on Distribution Systems and Planning

- Last year, Berkeley Lab and NARUC convened a public utility commission (PUC) advisory group from diverse states to help identify distribution system planning needs and guide a training program.
- Partnership with PNNL and NREL; sponsored by U.S. DOE
- Three regional trainings to date - *links to agenda and slides*
  - New England states – Sept. 27-29, 2017
  - Midwest states (MISO footprint) – Jan. 16-17, 2018
  - Western states – May 2-3, 2018
- Most recent training for PUCs *and* state energy offices, with participation of National Association of State Energy Officials
- State consumer representatives training with National Association of State Utility Consumer Advocates
  - Webinars begin this month; in-person training at NASUCA meetings
- Possible additional training in FY19
  - Mid-Atlantic and South

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Questions?

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BERKELEY LAB
Lawrence Berkeley National Laboratory

ALAN COOKE, PNNL – alan.cooke@pnnl.gov
JULIET HOMER, PNNL – juliet.homer@pnnl.gov
LISA SCHWARTZ, LBNL – lcschwartz@lbl.gov