UM 2005 Distribution System Planning

Workshop #1

5/2/2019

Oregon Public Utility Commission

Agenda

Purpose:

- Foundational concepts
- Phase 1 plan

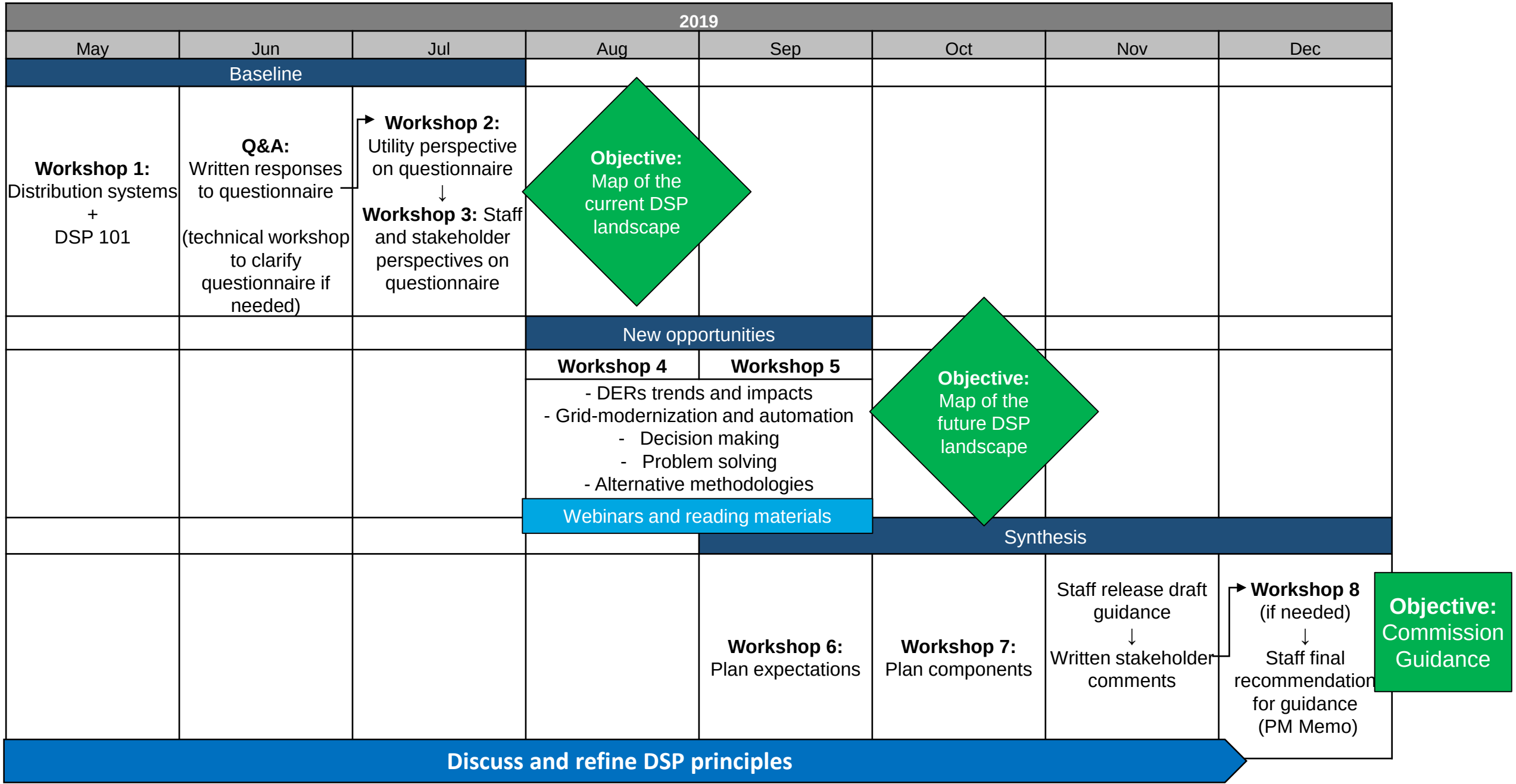
I. Welcome (OPUC)
II. Distribution Systems 101 (PNNL)
III. Break
IV. Utility Distribution Planning 101 (PNNL)
V. Break
VI. Phase 1 Schedule and Next steps (OPUC)

Oregon Public Utility Commission

Investigation structure (revised)

	Pre-Launch	Phase 1: Baselining	Phase 2: Assessment	Phase 3: Refinement
Timeframe	Feb. – Mar. 2019	Apr. – Dec. 2019	Jan. 2020 – May 2021	Jun. 2021 - ongoing
Goal	Identify the focus of and process for the DSP investigation	• Begin developing a knowledge-base • Develop guidelines for Plans	Review the current state of each utility's system, identify near- and long-term needs and next steps to get to optimization	Refine planning process, incorporate additional considerations and components
Milestones	• Staff whitepaper • Scoping workshop • Public meeting memo	• Workshops • Questionnaire • Draft guidance • Stakeholder process • Staff recommendation	• Establish individual dockets for each utility • Utilities file within ~8 mo. • OPUC/stakeholder process ~6 mo. • Staff recommendation (~Apr 2021)	• Continue to improve, evolve content, process, tools, and methodologies • Continue to incorporate evolving policy and operational requirements
Key Objective	Commission order opening investigation	Commission order adopting guidance for utilities to file initial Plans	Commission orders accepting utilities' initial DSPs	Commission orders accepting utilities' subsequent DSPs in a manner determined during Phase 1

Phase 1 Plan


2019
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline
Workshop 1:
Distribution systems
+
DSP 101
Q&A:
Written responses to questionnaire
(technical workshop to clarify questionnaire if needed)
Workshop 2:
Utility perspective on questionnaire
↓
Workshop 3: Staff and stakeholder perspectives on questionnaire
Objective:
Map of the current DSP landscape
New opportunities
Workshop 4
Workshop 5
- DERs trends and impacts
- Grid-modernization and automation
- Decision making
- Problem solving
- Alternative methodologies
Webinars and reading materials
Objective:
Map of the future DSP landscape
Synthesis
Workshop 6:
Plan expectations
Workshop 7:
Plan components
Staff release draft guidance
↓
Written stakeholder comments
Workshop 8
(if needed)
↓
Staff final recommendation for guidance
(PM Memo)
Objective:
Commission Guidance
Discuss and refine DSP principles

Next steps

- Staff posts Phase 1 schedule to UM 2005 – May 3rd
- Staff releases questionnaire – May 15th
- Responses due – June 14th
  - OPUC
  - Utilities
  - Stakeholders
- Workshop 2 – Utility perspectives: July 10, 2019 (tent)
- Workshop 3 – OPUC/Stakeholder perspectives: July 25, 2019 (tent)

Oregon Public Utility Commission

Defining DSP Principles

- Clearly communicate the Commission's vision for DSP
- Provide criteria for identifying investments and actions
- Create a pathway for achieving goals without prescribing specific outcomes or the means to achieve them

Oregon Public Utility Commission

Defining DSP Principles

Today

- Review existing OPUC missions, goals, etc.
- Review other states' DSP principles

Baselining

- Questionnaire input
- Understanding of current planning principles

New opportunities

- Continued discussion through shared learnings
- Understanding of emerging principles

Synthesis

- Staff proposal
- Stakeholder feedback
- Commission guidance

Oregon Public Utility Commission

Oregon – OPUC Focus

OPUC Mission ***(1911)***

- Safety
- Reliability
- Universal Access
- Affordability

SB 978 Findings ***(2018)***

- Equity
- Clean Energy
- Customer Options
- Participation

Oregon Public Utility Commission

Oregon – Smart Grid Goals

(2012)

The Commission's goal is to benefit ratepayers of Oregon investor-owned utilities by fostering utility investments in real-time sensing, communication, control, and other smart grid measures that are cost-effective to consumers and that achieve some of the following…

Oregon Public Utility Commission

Oregon – Smart Grid Goals

(2012)

1. Enhance the reliability, safety, security, quality, and efficiency of the transmission and distribution network	• Improve fault detection, isolation, and restoration • Reduce the frequency, scale, and duration of outages • Increase resiliency to withstand physical and cyber-attacks, and natural disasters • Provide real-time visibility into state of systems and assets • Reduce power line losses • Enhance the ability to provide reactive power, voltage support, and other ancillary services Increase the ability to control voltage and power flows • Increase capacity utilization and upgrade capacity ratings on existing lines; and • Enable more precise sizing of equipment.
2. Enhance the ability to save energy and reduce peak demand	• Enable integration and control of smart appliances and other smart consumer devices • Provide access to detailed, real-time information on electricity use and costs to help customers manage use and costs and understand how to save; and • Improve monitoring of building equipment to alert building owners to problems and improve performance and control of equipment and systems.
3. Enhance customer service and lower cost of utility operation	• Reduce costs of meter reading • Reduce costs and improve customer service through more efficient notification of and response to outages, more efficient detection of theft and broken meters, more effective handling of service orders, and improved billing, credit, collection, and connection and disconnection practices; and • Reduce billing errors and call center transactions.
4. Enhance the ability to develop renewable resources and distributed generation	• Reduce the cost of integrating utility-scale wind and solar into the grid • Improve the ability to safely and efficiently integrate distributed generation and energy storage into the power system • Facilitate new resource options for capacity and ancillary services; and • Enable micro grids.

Oregon – DSP Investigation

(2019)

DRIVERS

Insight

Optimization

System Efficiency

Planning Process

OUTCOMES

Maximized Customer Value

- Transparent
- Rigorous
- Interactive
- Advanced

CONSIDERATIONS

Oregon Public Utility Commission

Overview of other states

Normalized State Objectives

Objectives	CA	DC	FL	HI	IL	MA	MN	NC	NY	OR	TX
Affordability	●	●	●	●	●	●	●	●	●	●	●
Reliability	●	●	●	●	●	●	●	●	●	●	●
Customer Enablement	●	●	●	●	●	●	●	●	●	●	●
System Efficiency	●	●	●	●	●	●	●	●	●	●	●
Enable DER Integration	●	●	●	●	●	●	●		●	●	●
Adopt Clean Technologies	●	●	●	●	●	●		●	●	●	●
Reduce Carbon Emissions	●	●	●	●				●	●	●	●
Operational Market Animation	●	●		●		●	●		●		

Adapted from U.S. Department of Energy, Modern Distribution Grid - Volume III: Decision Guide, www.doe-dspx.org

Oregon Public Utility Commission

California – DRP Legislation

(2013)

- Distribution planning should start with a **comprehensive, scenario driven, multi-stakeholder planning process** that standardizes data and methodologies to address **locational benefits and costs** of distributed resources.
- California's distribution system planning, design and investments should move toward an **open, flexible, and node-friendly** network system (rather than a centralized, linear, closed one) that enables **seamless DER integration**.
- California's electric distribution service operators (DSO) should have an expanded role in utility distribution operations (with CAISO) and should act as a **technology-neutral marketplace** coordinator and **situational awareness** and operational **information exchange** facilitator while avoiding any operational conflicts of interest.
- Flexible DER can provide value today to **optimize markets, grid operations, and investments**. California should expedite DER participation in wholesale markets and resource adequacy, unbundle distribution grid operations services, create a **transparent process to monetize DER services**, and reduce unnecessary barriers for DER integration.

Oregon Public Utility Commission

California – CPUC definition of grid modernization

(2018)

A modern grid allows for the integration of distributed energy resources (DERs) while maintaining and improving **safety and reliability**.

A modern grid facilitates the **efficient integration of DERs into all stages of distribution system planning and operations** to fully utilize the capabilities that the resources offer, without undue cost or delay, **allowing markets** and customers to more fully realize the value of the resources, to the extent cost-effective to ratepayers, while ensuring **equitable access to the benefits of DERs**.

A modern grid achieves safety and reliability of the grid through **technology innovation** to the extent that is **cost-effective to ratepayers** relative to other legacy investments of a less modern character.

Oregon Public Utility Commission

New York - REV

(2015)

- **Community Engagement:** **engage with the state's diversity of communities** to assist them with developing and implementing clean energy solutions.
- **Customer Value and Choice:** **empower customers with tools to efficiently manage their power** from the grid or distributed resources, and enable competitive markets to encourage the entry of private firms to **provide the services and energy options those customers value**.
- **Innovation and Technology:** align energy innovation with market demand. Partner with the state's academic research institutions and the private sector to **support development of next generation clean energy** technology solutions and innovative business and financing models, train the next generation of talent to support growth of the clean energy economy, work with the clean tech innovation sector outside of New York to help import leading solutions from elsewhere and to help export NY's solutions to receptive markets outside the state.
- **Private Sector Investment:** increase the leverage of **private sector capital investment** by working through the NY Green Bank to develop innovative public/private partnerships and financing models that bridge clean energy finance market gaps. Develop **price signals to better reflect the value of clean energy** and guide the market's **development of DERs**, products, and services.
- **Market Transformation:** focus on market transformation, enabling the clean energy supply chain to engage in a new, integrated, and self-sustaining private sector driven clean energy market. Focus on removing common market barriers to help facilitate development of **competitive markets**, enhancing **data sharing and transparency** efforts, supporting outreach and education, and encouraging **demonstration projects**.
- **Efficiency:** Technological Efficiency, Building Efficiency, System Efficiency, Market Efficiency, Government Efficiency

Oregon Public Utility Commission

Minnesota - IDP

(2016)

- Maintain and enhance the **safety, security, reliability, and resilience** of the electricity grid, at **fair and reasonable costs**, consistent with the state's energy policies;
- Enable greater customer **engagement, empowerment, and options** for energy services;
- Move toward the creation of efficient, cost-effective, accessible **grid platforms for new products**, new services, and opportunities for **adoption of new distributed technologies**;
- Ensure **optimized** utilization of electricity grid assets and resources to **minimize total system costs**;
- Facilitate **comprehensive, coordinated, transparent, integrated** distribution system planning.

Oregon Public Utility Commission

Hawaii – HECO Grid Modernization Strategy

(2017)

- Enable greater **customer engagement, empowerment, and options** for utilizing and providing energy services.
- Maintain and enhance the **safety, security, reliability, and resiliency** of the electric grid, at **fair and reasonable costs**, consistent with the state's energy **policy goals**.
- Facilitate **comprehensive, coordinated, transparent, and integrated** grid planning across distribution, transmission, and resource planning.
- Move toward the creation of efficient, cost-effective, accessible **grid platforms for new products**, new services, and opportunities for **adoption of new distributed technologies.**
- Ensure **optimized** utilization of resources and electricity grid assets to **minimize total system costs** for the **benefit of all customers**.
- Determine **fair cost allocation and fair compensation** for electric grid services and benefits provided to and by customers and other **non-utility service providers**.

Oregon Public Utility Commission

Rhode Island – Power Sector Transformation Initiative

(2017)

Three objectives for grid modernization

- Control long-term **costs** of the system;
- Provide more energy **choices** for customers;
- Build a **flexible** grid to **integrate more clean energy generation**.

Oregon Public Utility Commission

Thank you!!

Caroline Moore
(503) 480-9427
Caroline.F.Moore@state.or.us

Oregon Public Utility Commission

Examples: California

DRP Planning Assumptions

Integrated Capacity Analysis: Calculation of available load and hosting capacity at a circuit

Locational Net Benefit Analysis: Identifies net benefits of distributed energy resources (DERs) at a location

DER Growth Scenarios: Forecast of DER growth at circuit level

Grid Needs Assessment (GNA)

IOU planning document that identifies forecasted grid needs based on planning assumptions

Grid Modernization Framework

Decision framework upgrade technological capability of grid to integrate DERs

General Rate Case (GRC)

Authorizes Grid Modernization Investments

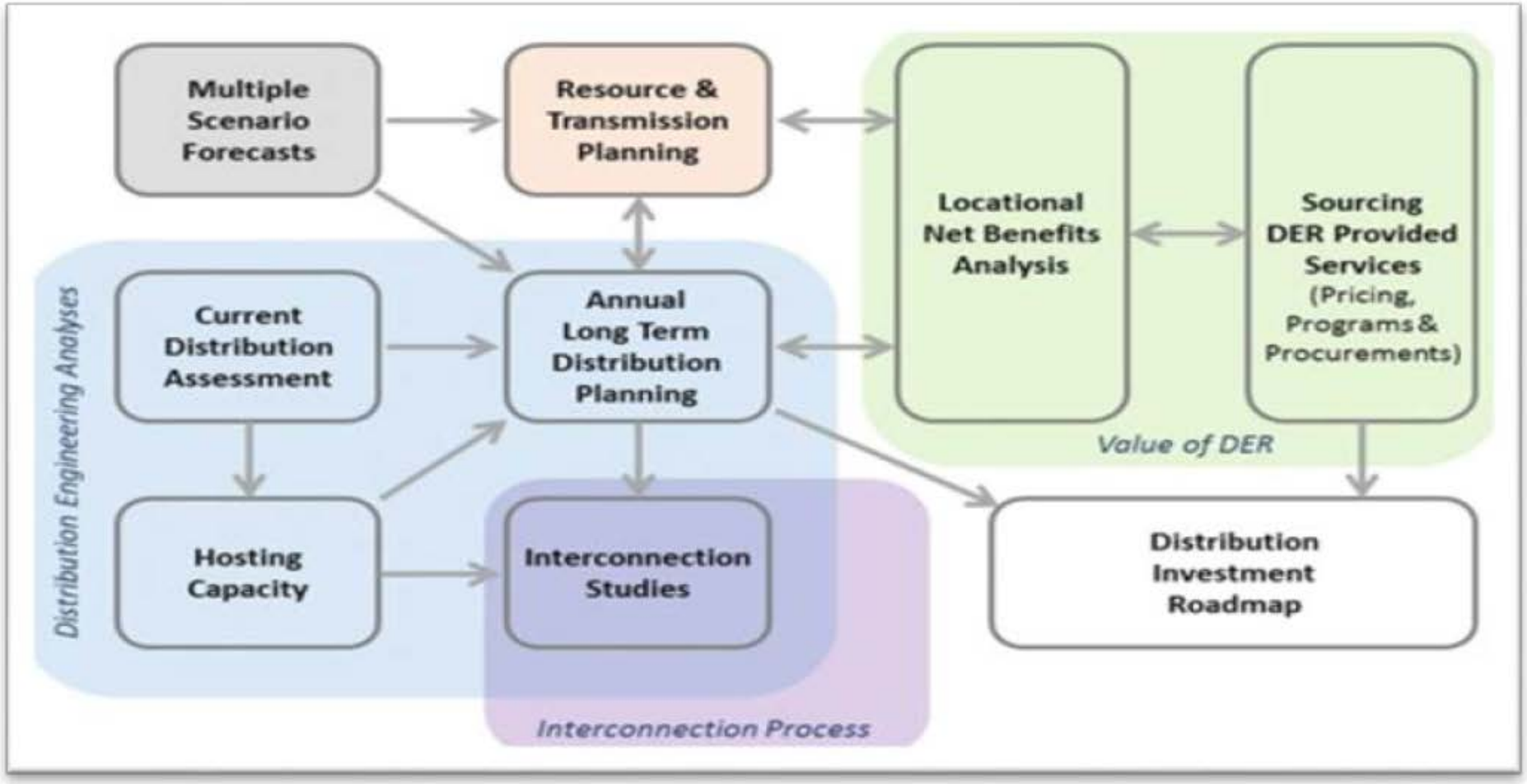
Distribution Investment Deferral Framework (DIDF)

Decision framework defer infrastructure investments by deploying DERs where cost-effective

Integrated Distributed Energy Resources (IDER) Solicitation Process

Authorizes procurement of DERs for distribution deferral

Examples: MN, ICF report



HECO

Figure 7 "Run" – Illustrating an Envisioned Future State for Technology Supporting the Grid

Hawaiian Electric
Maui Electric
Hawai'i Electric Light

Oregon Public Utility Commission