NATIONAL COUNCIL ON ELECTRICITY POLICY

Welcome! The NCEP Webinar Will Begin Shortly

2024 NCEP Annual Meeting: Engaging Communities in their Energy Future

October 29-30, 2024

Tempe, AZ

Register Now!

The National Council on Electricity Policy ADER Webinar

September 27, 2024

Aggregated Distributed Energy Resources in 2024: The Fundamentals

NATIONAL COUNCIL ON ELECTRICITY POLICY

NATIONAL COUNCIL ON ELECTRICITY POLICY

Welcome

- This webinar is being recorded. The presentation and recording will be posted at www.naruc.org/ncep/ncep-home.
- Type questions in the Q&A box.
- Join the NCEP listserv to be notified of future events by selecting NCEP as an interest area in your MYNARUC account at www.naruc.org/mynaruc.

NATIONAL COUNCIL ON ELECTRICITY POLICY

Agenda

Topic	Speaker
NCEP welcome	**Deborah Reynolds**, NCEP/NARUC
DER Integration and Compensation Initiative – *NARUC/NASEO*	**Jeff Loiter**, NARUC Center for Partnerships & Innovation
DER Policy Tracking – FERC Order 2222	**Chris Hickman**, Collaborative Utility Solutions
Aggregated Distributed Energy Resources in 2024: The Fundamentals	**Stephanie Bieler** and **Katerina Stephan,** RMI

The National Council on Electricity Policy

Deborah Reynolds
Sr. Regulatory Policy Specialist
NARUC Center for Partnerships and Innovation
dreynolds@naruc.org
www.naruc.org/ncep

NATIONAL COUNCIL ON ELECTRICITY POLICY

NATIONAL COUNCIL ON ELECTRICITY POLICY

The National Council on Electricity Policy (NCEP)

Unique forum for state electricity decision-makers throughout the country to examine the ways new technologies, policies, regulations, and markets impact their state and the grid.

NCEP thanks the U.S. Department of Energy for its ongoing support. NCEP is an initiative supported by NARUC.

www.naruc.org/ncep/ncep-home

NATIONAL COUNCIL ON ELECTRICITY POLICY

Upcoming Events

Fall 2024 NCEP Member Update Webinar

- October 11, 2024
- Register now!

NCEP 2024 Annual Meeting: Engaging Communities in their Energy Future

- October 29-30, 2024
- Tempe, AZ
- Register now! Room block closes October 15

National Association of Regulatory Utility Commissioners

Jeff Loiter
Technical Director
NARUC Center for Partnerships & Innovation
jloiter@naruc.org
www.naruc.org/cpi/cpi-home

NARUC
National Association of Regulatory Utility Commissioners

Collaborative Utility Solutions

Chris Hickman
CEO
chris.hickman@culsn.org
www.culsn.org

Collaborative
UTILITY SOLUTIONS

FERC Order 2222 and DER Policy Tracking

Initiative has four major elements:

1. **Bi-Monthly Report** – Beginning with this report in September 2024 and being released at the end of every other month (November 2024, January 2025, etc.) and each report will contain three sections
    a. Current News and New Developments,
    b. Key Issues Analysis, and
    c. Tracker Tips and Highlights.
    d. First Report available: https://t.ly/2eY3w
2. **Bi-Monthly Webinar** – Beginning on October 24th, 2024, bi-monthly webinars will be held to present current information and allow discussion on topics.
    a. October 22th, 2024 – Webinar will introduce this initiative and explain how Collaborative Utility Solutions (CUS) will coordinate with policy makers. Register for webinar at: https://t.ly/fKrS3
    b. December 12th, 2024 – Webinar will provide a tutorial on the FERC2222.org website, how to search content and generally how to interact with CUS to develop and make available relevant DER information. Register for Webinar at: https://t.ly/Ctevy
3. **FERC2222.org website –** To be launched in November. The first release of the website will provide access to the new Policy Tracker that will aggregate all policy related to FERC Order 2222 and DER policy that is shared with Collaborative Utility Solutions. This information will be 'tagged' by state, ISO, and key issue to allow effective searching. It will also provide a library of key DER-related papers or relevant information. The second release of the website in December will provide secure chat rooms that will allow policy makers a forum to discuss key issues.
4. **White Papers** – David Kathan will lead an effort to create a series of white papers for key DER topics over the next year.

We Need Your Help!

Tracking a wide range of key policy issues related to DER integration across the U.S. will be no small task. To that end, state commissions and RTOs/ISOs are invited and encouraged to assist Collaborative Utility Solutions in crowdsourcing information to be included in the Policy Tracker. The value the Policy Tracker can provide will be largely dependent on policy makers sharing information with CUS each month proactively. Specifically, CUS welcomes the opportunity to periodically meet with Commissioners or key staff members at state utility commissions and RTOs/ISOs to hear from you regarding your FERC Order 2222 and DER implementation activities, key dockets, rulemakings, or other proceedings.

Please email Suzanne Bertin (suzanne.bertin@cusln.org) with any updates for your states or organizations that you would like to have included in the Policy Tracker, or to arrange a meeting to discuss your state's or organization's implementation status.

NATIONAL COUNCIL ON ELECTRICITY POLICY

Questions & Answers

Resources

NATIONAL COUNCIL ON ELECTRICITY POLICY

Mini-Guides in Development

State Agency Coordination to Deliver Effective Energy Assistance Programs

– *Coming Late February*

Selected Webinar Recordings

NCEP Spring 2024 Member Update Webinar View here

Data Sharing and Data Availability to Improve Affordability Outcomes View here

Transportation Electrification: State Level Roles and Collaboration View here

Resources

NATIONAL COUNCIL ON ELECTRICITY POLICY

Mini-Guide Series

Partnerships between State Government Agencies and Higher Education Institutions to Support Recruitment (2024)

Air Quality Management Agency Engagement with State Energy Agencies (2024)

Public Utility Commissions and the Investment Community: Opportunities for Engagement (2023)

Transportation Electrification: State-Level Roles and Collaboration among Public Utility Commissions, State Energy Offices, and Departments of Transportation (2022)

Transmission Siting: State Agency Decision-Making (2022)

Engagement between States and Regional Transmission Organizations (2022)

Engagement between Public Utility Commissions and State Consumer Advocates (2021)

Engagement between Public Utility Commissions and State Energy Officials (2020)

Engagement between Public Utility Commissions and State Legislatures (2019)

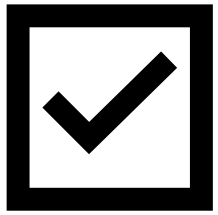
State Agency Coordination During Energy-Related Emergencies (2019)

Local Government Engagement with Public Utility Commissions (2019)

NATIONAL COUNCIL ON ELECTRICITY POLICY

Stay Up to Date on NCEP Activities!

Visit the NCEP webpage to find all resources: www.naruc.org/ncep/ncep-home/



Join the NCEP listserv: www.naruc.org/mynaruc/

RMI

Katerina Stephan
Senior Associate
Kstephan@rmi.org
www.rmi.org

Stephanie Bieler
Senior Associate
Stephanie.bieler@rmi.org
www.rmi.org

Aggregated DERs: The Fundamentals

Presentation to the National Council on Electricity Policy

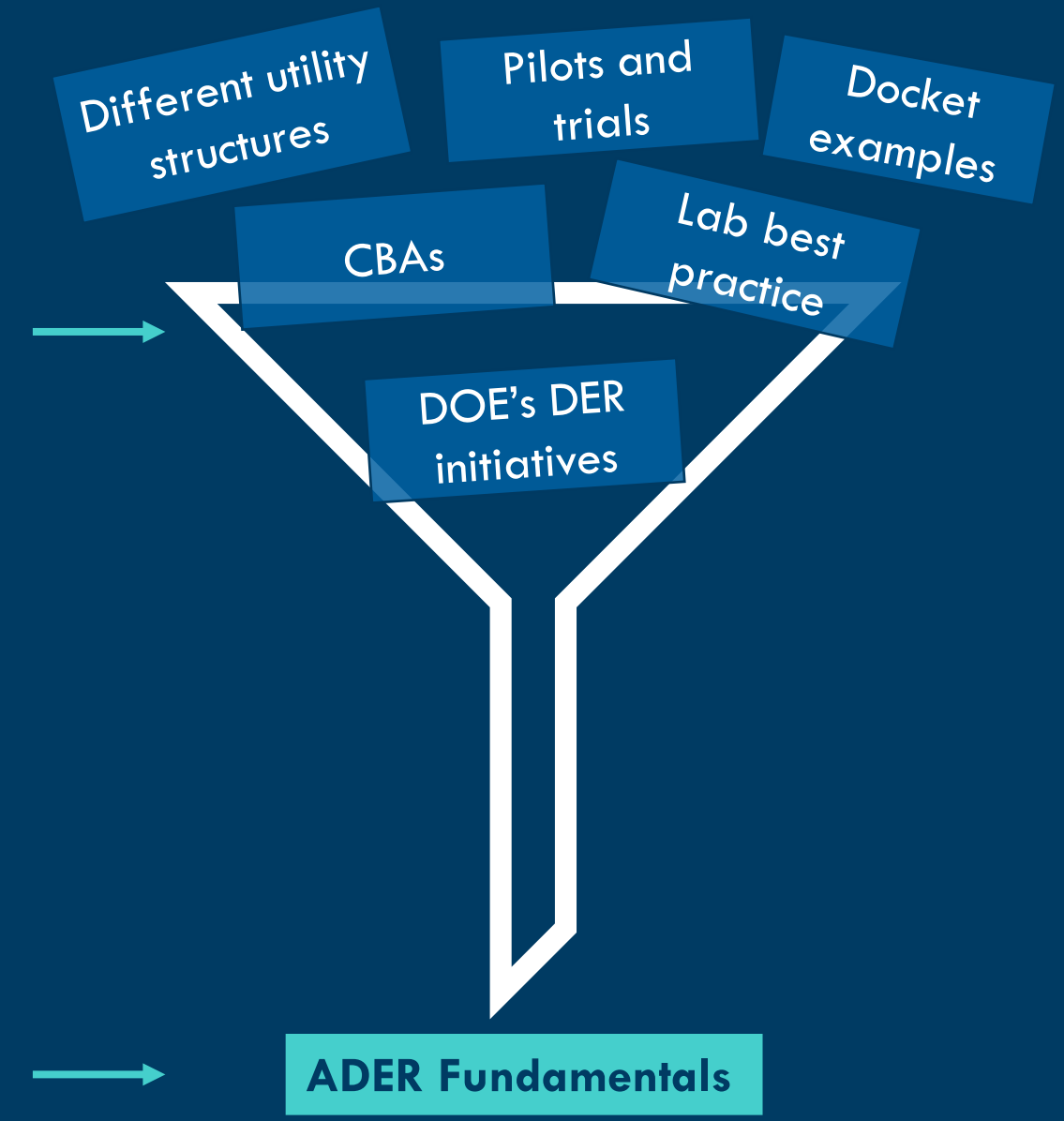
September 27, 2024

Agenda

1. Introduction: The NARUC-NASEO DER Integration & Compensation Initiative
2. Rationale for the Report
3. Structure of the Report
4. The Evolution of DERs in the Energy System
5. DERs in Energy Policy
6. Details of the Report
7. How ADERs Provide Grid Services
8. ADER Grid Services
9. ADER Valuation
10. ADER Compensation
11. Case Studies
12. Link To The Report

Rationale for the Report

- ADER literature is information rich
- Can be challenging to navigate and apply



- Accessible and concise information
- Neutral positionality
- Resource rich
- Navigate by your question (Q&A)
- Navigate by your state market structure (cohort)

Structure of the Report

Structured against 4 key areas:

1. How ADERs Provide Grid Services
2. ADER Grid Services
3. ADER Valuation
4. ADER Compensation

Short case studies

User-centric design:

- NARUC and NASEO cohorts
- Each section **Q&A**
- References for further reading

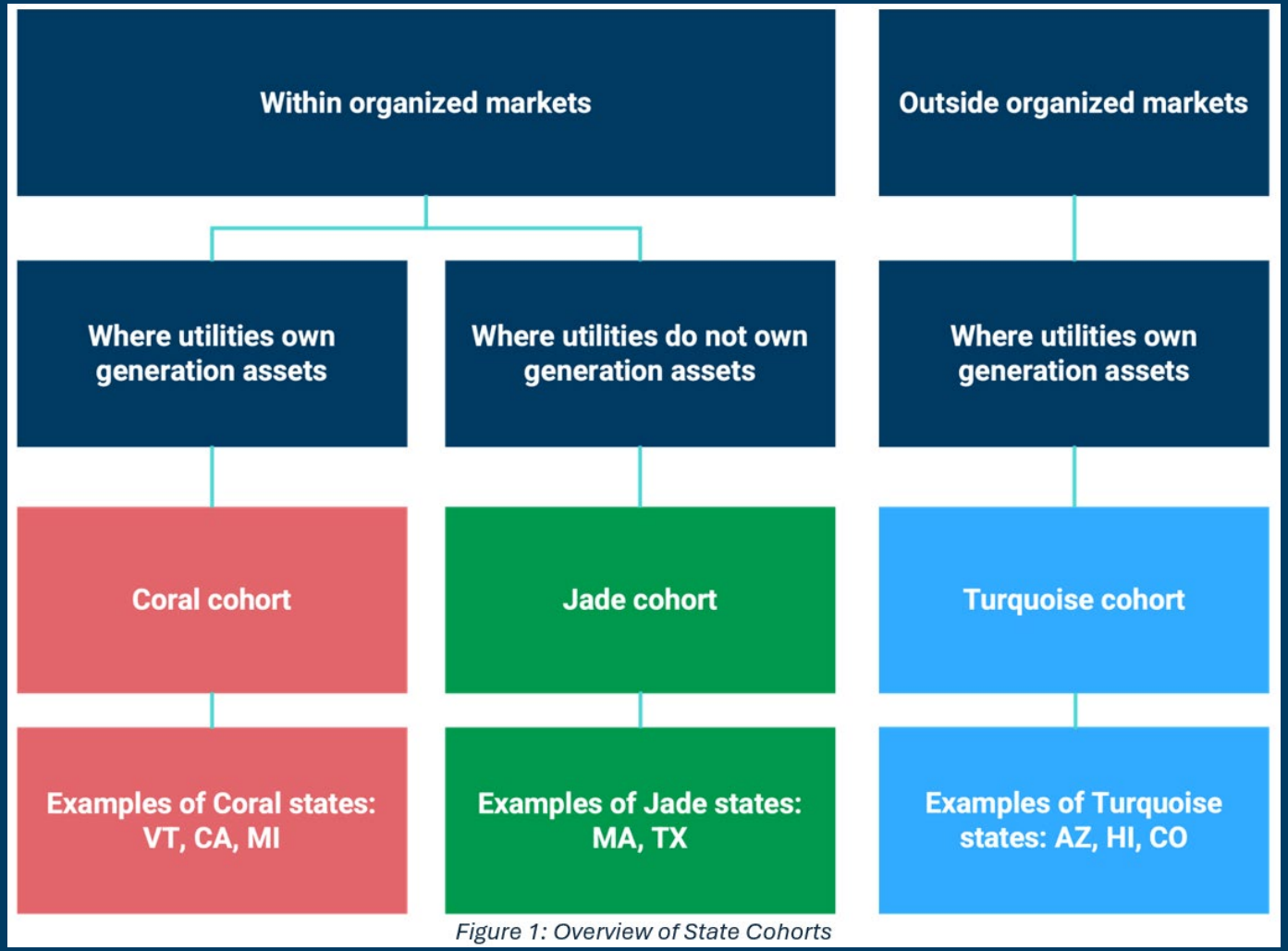


Figure 1: Overview of State Cohorts

NARUC and NASEO "cohorts" of varying regulatory constructs

Details of the Report

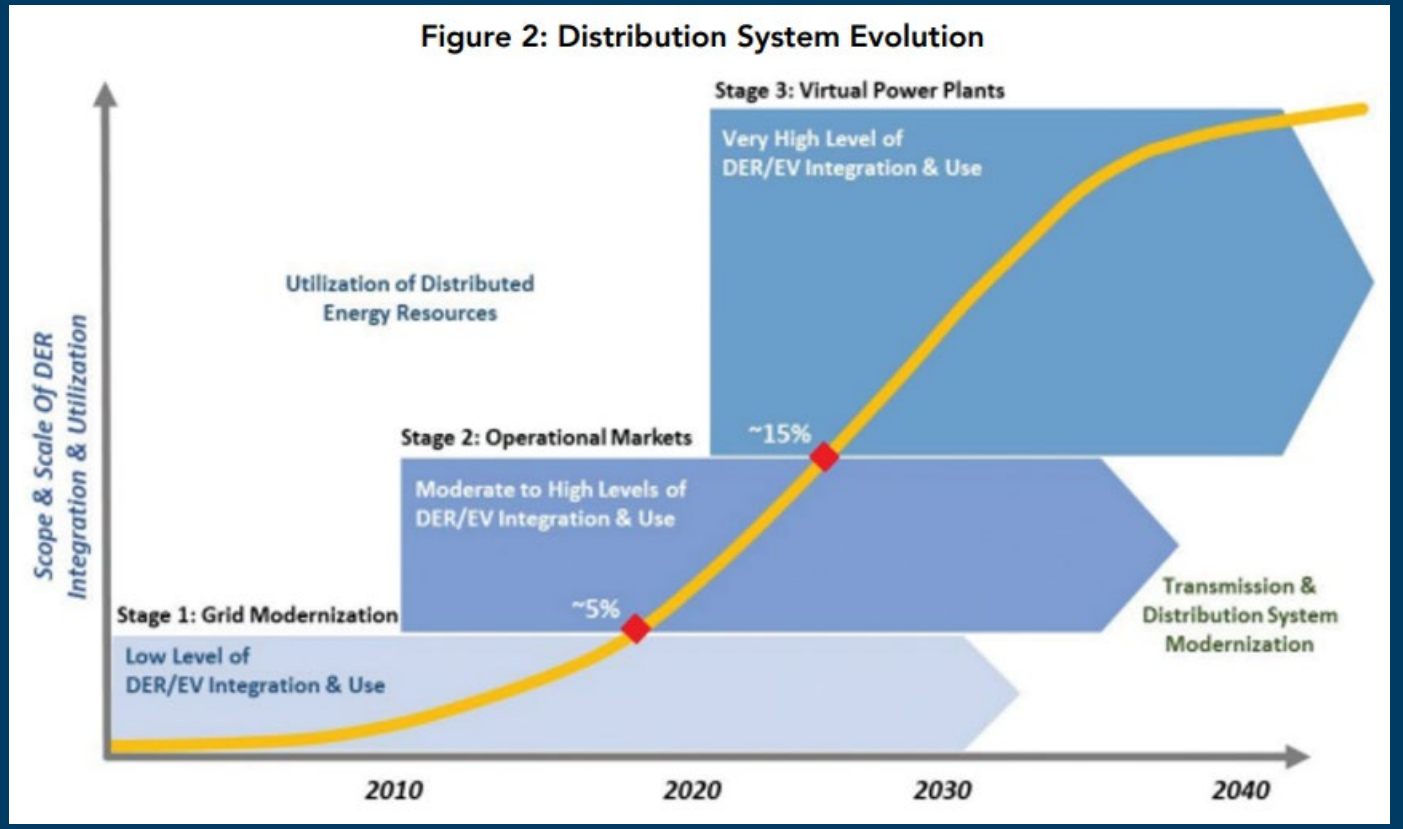
NARUC
National Association of Regulatory Utility Commissioners

Aggregated Distributed Energy Resources in 2024: The Fundamentals

RMI
July 2024

The Evolution of DERs in the Energy System

U.S. DOE, Office of Electricity, *Distribution System Evolution*, 2023



DER taxonomy based on Jennifer Downing et al., *Pathways to Commercial Liftoff: Virtual Power Plants*, 2023

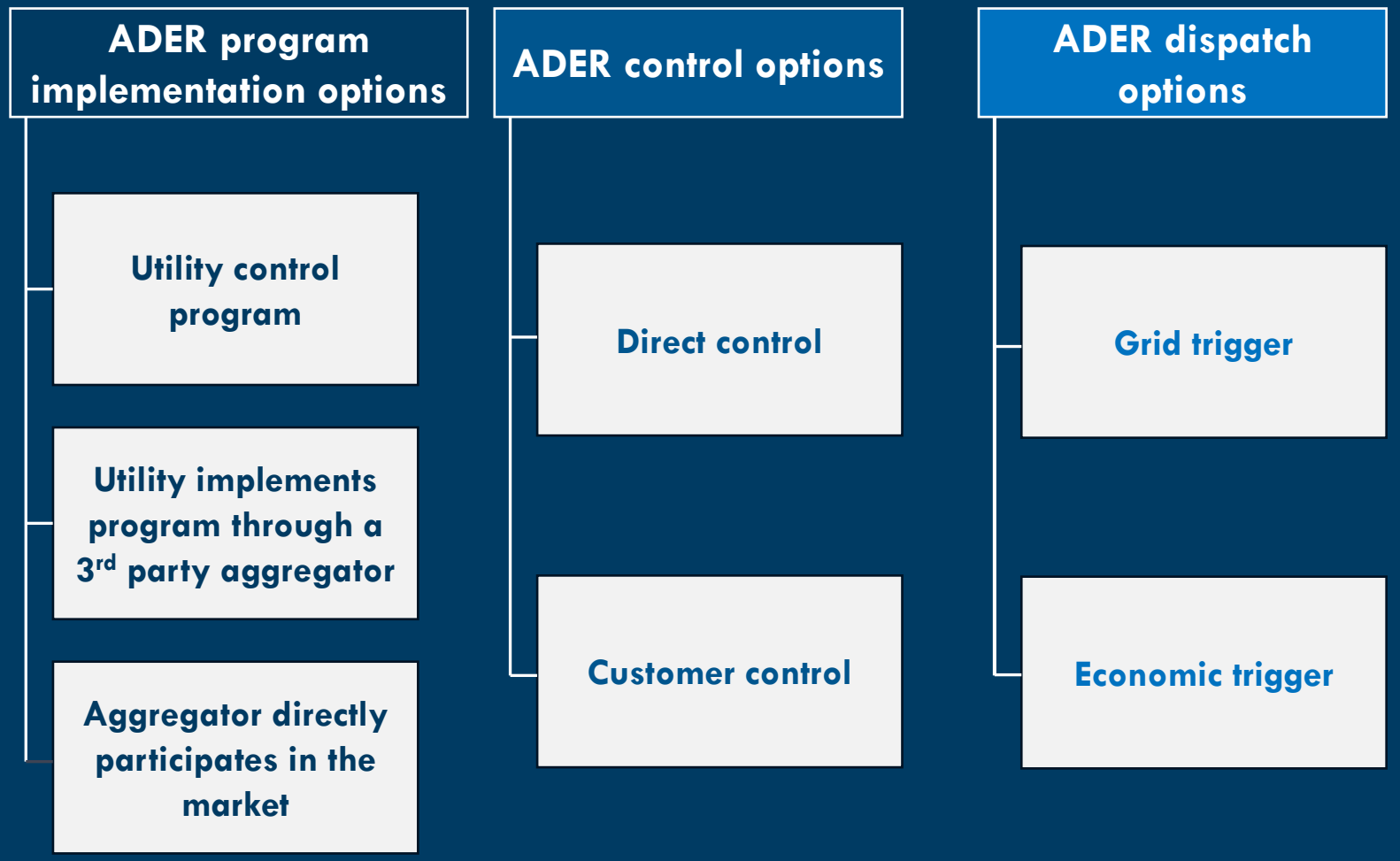
	Examples of Technologies that Can Be Aggregated into ADERs or VPPs
Demand DERs	Electric vehicle (EV) chargers, smart thermostats paired with electric building technologies such as heat pumps, electric water heaters, and commercial and industrial (C&I) equipment
Generation DERs	Distributed solar, fuel-based generators
Storage DERs	Behind-the-meter (BTM) battery storage systems (whether connected to distributed generation or not) and EV batteries

DERs in Energy Policy

- **ADERs can support a wide range of Priority Policy Outcomes**
- **Policymakers may wish to consider their Priority Policy Outcomes and tailor ADER programs to their requirements**
- **Policymaking processes can be applied to ADERs:**

Priority Policy Outcomes
GHG Reductions
Pollutant Emission Reductions
Ratepayer Affordability
Social Equity
Resilience
Reliability
Customer Empowerment

How ADERs Provide Grid Services



How ADERs Provide Grid Services

1. How are ADER programs structured?
2. Who controls ADERs?
3. How are ADERs dispatched?

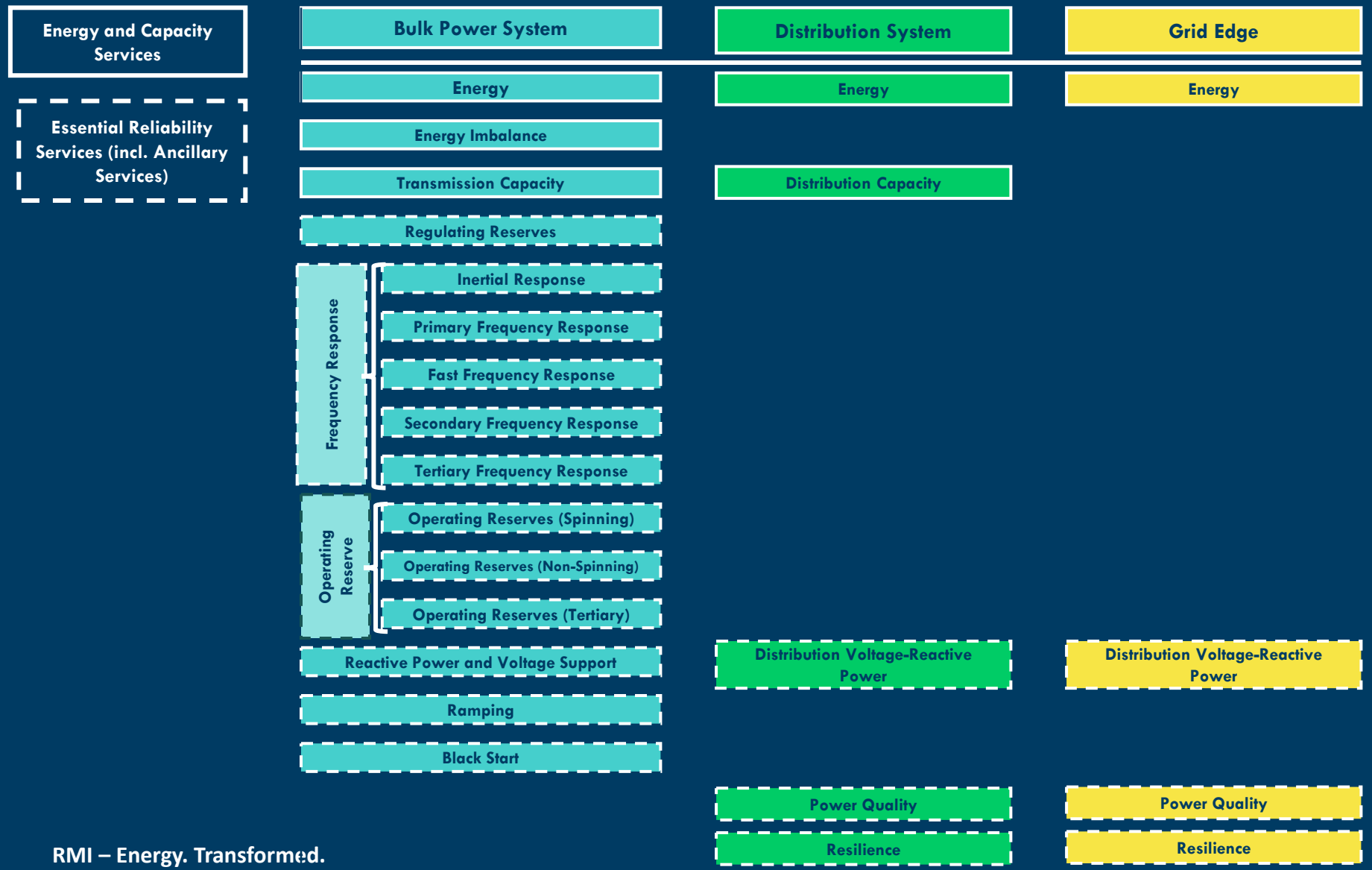
How ADERs Provide Grid Services

ADER program implementation options	Some Pros/Cons of implementation options
Utility control program	+ IOUs have regulatory oversight - No competition to drive improvement
Utility implements program through a 3rd party aggregator	+ 3rd parties can innovate and compete to improve ADERs - Technical and security challenges around data sharing
Aggregator directly participates in the market	+ Grid services match actual wholesale conditions - Can have more complexity and risk

How ADERs Provide Grid Services

1. How are ADER programs structured?
2. Who controls ADERs?
3. How are ADERs dispatched?

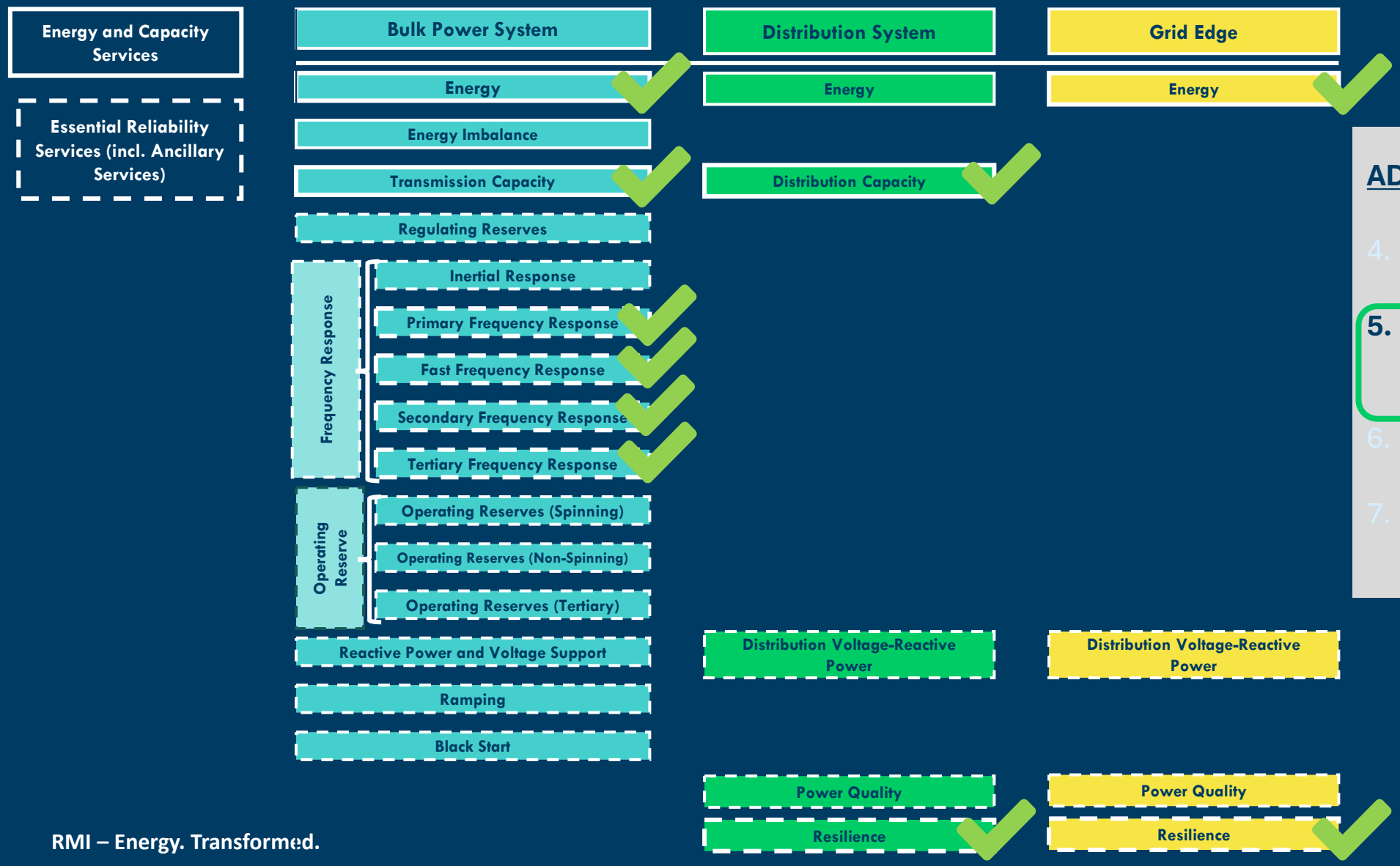
ADER Grid Services



ADER Grid Services

4. Which grid services can ADERs provide?
5. Which grid services (described above) do ADERs provide in the U.S. today?
6. How can ADERs provide multiple grid services?
7. How can grid services be coordinated?

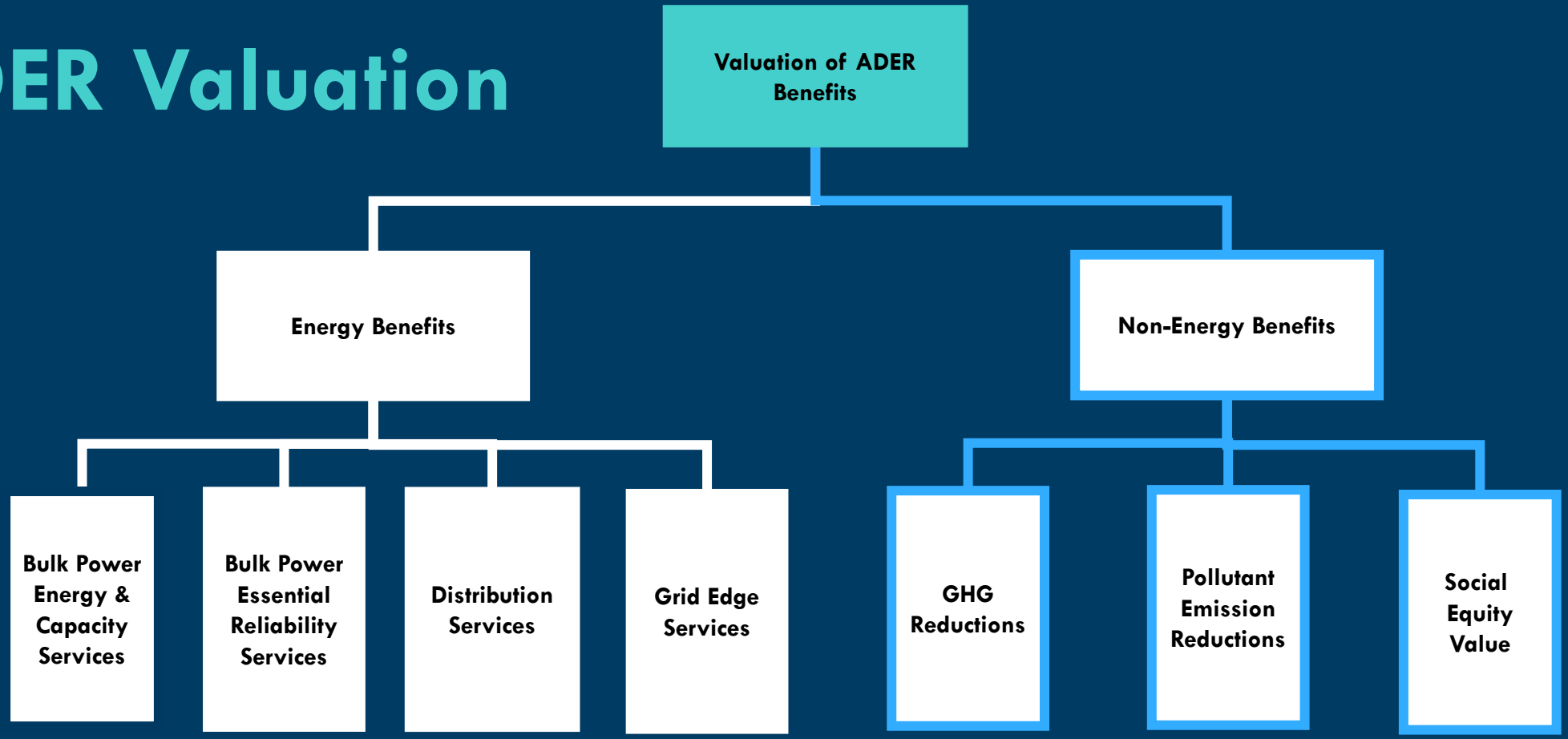
ADER Grid Services



ADER Grid Services

4. Which grid services can ADERs provide?
5. **Which grid services (described above) do ADERs provide in the U.S. today?**
6. How can ADERs provide multiple grid services?
7. How can grid services be coordinated?

ADER Valuation



ADER Valuation Fundamental Questions

8. How are ADER energy benefits valued?
9. How are energy & capacity grid services for bulk power systems valued?
10. How are essential reliability services for bulk power systems valued?
11. How are distribution services valued?
12. How are grid edge services valued?
13. How are ADER non-energy benefits valued?
14. Are there existing tools or examples I can use to estimate the value of grid services from ADERs?
15. How are all these values combined to inform cost-effectiveness tests?
16. How are grid service values combined to inform pricing?

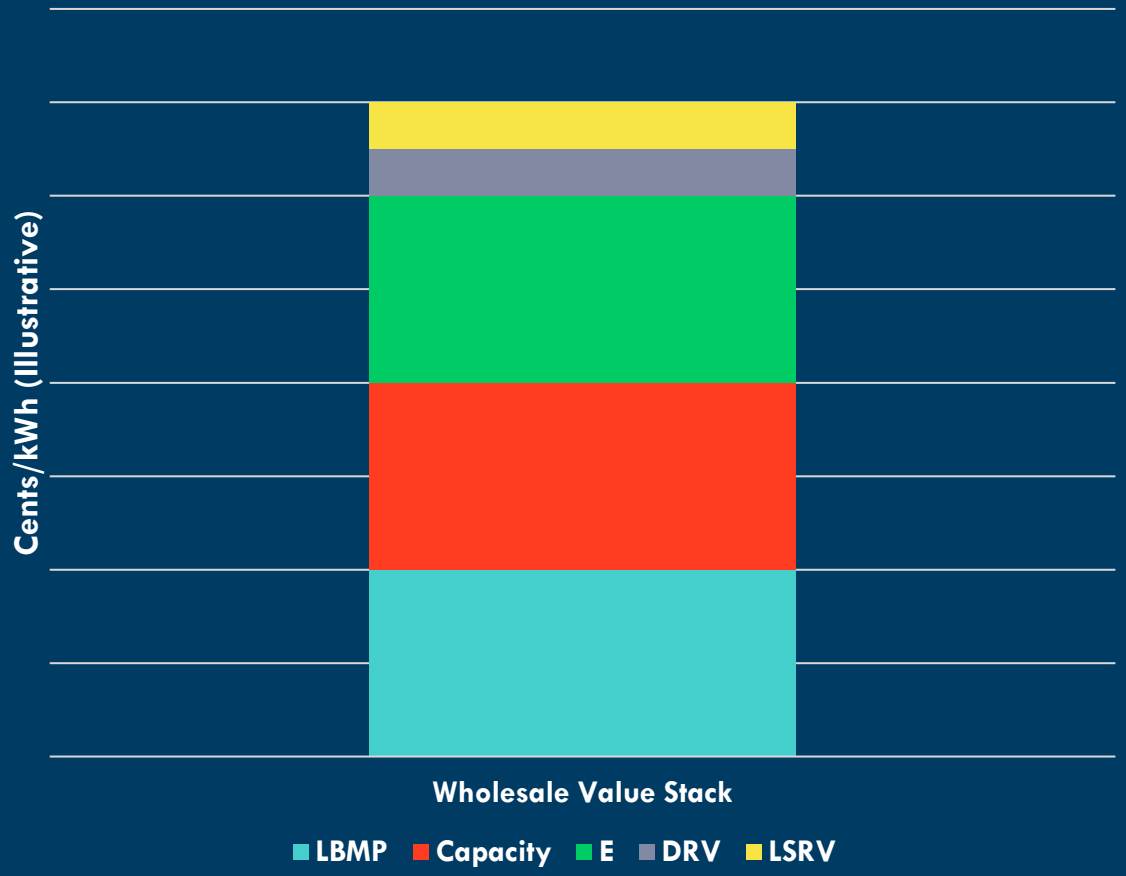
ADER Valuation

Resources for Estimating Value of Grid Services from ADERs
National Standard Practice Manual (NSPM) for Benefit-Cost Analysis of Distributed Energy Resources
New England Avoided Energy Costs Report
California Avoided Cost Calculator
New York Solar Value Stack Calculator
Time-Sensitive Value Calculator
LBL Interruption Cost Estimator
Central Hudson Benefit Cost Handbook
EPA Co-Benefits Risk Assessment Impacts Screening and Mapping Tool
Distributional Equity Analysis Guidance

ADER Valuation Fundamental Questions

8. How are ADER energy benefits valued?
9. How are energy & capacity grid services for bulk power systems valued?
10. How are essential reliability services for bulk power systems valued?
11. How are distribution services valued?
12. How are grid edge services valued?
13. How are ADER non-energy benefits valued?
14. **Are there existing tools or examples I can use to estimate the value of grid services from ADERs?**
15. How are all these values combined to inform cost-effectiveness tests?
16. How are grid service values combined to inform pricing?

ADER Compensation



LBMP: Energy commodity
Capacity: Installed capacity market
E: Environmental benefit
DRV: Demand reduction value
LSRV: Locational system relief value

ADER Compensation Fundamental Questions

17. What are "prices" and how can they be used to compensate ADERs?
18. What are examples of price structures that can compensate ADERs for grid services?
19. What are the different critiques of retail rates used to compensate ADERs?
20. How can ADERs be compensated through a program?
21. Can ADERs be compensated using both prices and programs?
22. Which compensation approaches are applicable to my state?
23. How do I determine if a customer or an aggregator delivered a grid service? How do I determine how much to pay a customer for "Pay-for-Performance"?

ADER Compensation

- **ADERs can respond to market prices or customer retail tariffs**
- **Market Prices:** electricity prices set by the market
- **Customer Retail Tariffs:** price customers pay for electricity, can include:
  - **Energy charge:** based on amount and time of day consumed
  - **Capacity Charges:** based on customer peak demand (coincident with system)
  - **Grid Infrastructure Relief:** based on customer impact on transmission & distribution costs

ADER Compensation Fundamental Questions

17. **What are "prices" and how can they be used to compensate ADERs?**
18. What are examples of price structures that can compensate ADERs for grid services?
19. What are the different critiques of retail rates used to compensate ADERs?
20. How can ADERs be compensated through a program?
21. Can ADERs be compensated using both prices and programs?
22. Which compensation approaches are applicable to my state?
23. How do I determine if a customer or an aggregator delivered a grid service? How do I determine how much to pay a customer for "Pay-for-Performance"?

Case Studies

	Hawaii	Vermont	Massachusetts
Program(s)	Battery Bonus, Bring Your Own Device, Smart DER Program, Swell Home Battery Rewards Program	Bring Your Own Device, Energy Storage Solutions	ConnectedSolutions
Cohort	Turquoise	Coral	Jade
Price or Program?	Both	Program	Program
Load Control Method	Depending on program, customer control or direct control (via aggregator)	Direct control via utility	Direct control via aggregator
Technologies Included	Battery storage, solar, future smart tech as available	Battery storage	Battery storage and smart thermostats, future smart tech as available
Grid Services Provided	Generation capacity, Capacity Build, Capacity Reduction, Energy, Fast Frequency Response	Generation capacity, resilience	Generation capacity

Thank you!

Link to the Report

Link to the NARUC-NASEO DER Integration & Compensation Resource Library

NATIONAL COUNCIL ON ELECTRICITY POLICY

Questions & Answers