



STRATEGEN WEBINARS

HOSTED BY:

POSITIVE REINFORCEMENT:



MARK PATTERSON
CHIEF STRATEGY OFFICER

V-DER TARIFFS ENCOURAGING
GOOD GRID CITIZENSHIP IN
THE US AND BEYOND



RON NELSON
DIRECTOR

March 5, 2020, 10am – 11am
EASTERN AUSTRALIA (AEST)

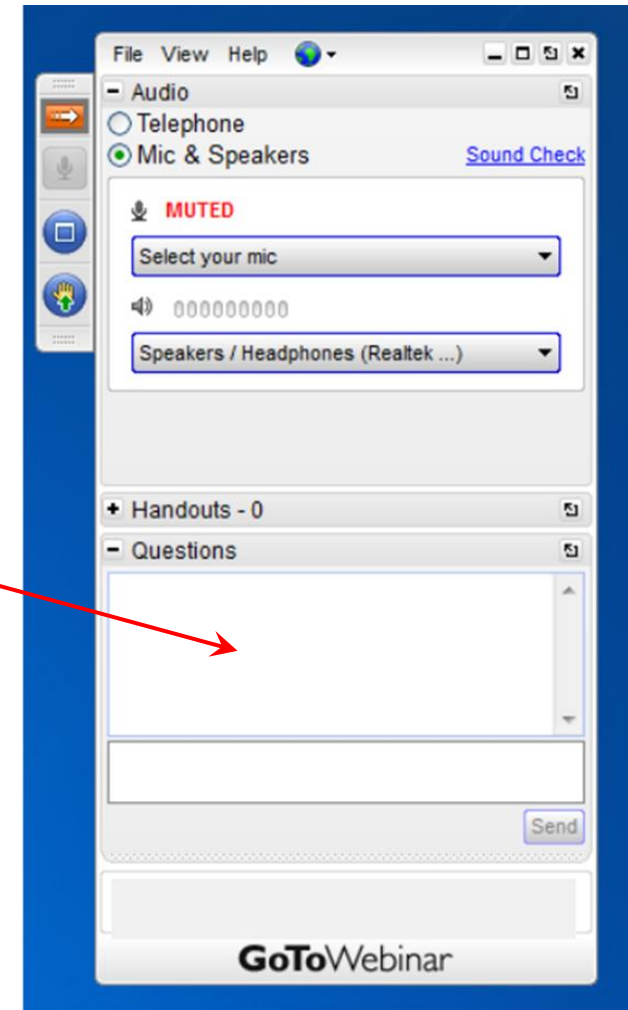
March 4, 2020, 3pm – 4pm
USA PACIFIC (PT)

www.strategen.com/webinars

Housekeeping

- All participants are in listen-only mode
- We will engage with questions raised after all panelists have presented
- Type your questions here

Today's webinar is being recorded – the slides and recording will be available after the webinar



Today's Webinar

Positive Reinforcement: V-DER Tariffs

March 4 (PT) 5 (AET) 2020

3pm PT / 10am AET

Past Webinars

Energy Storage on the Move

Thursday, September 19, 2019

2pm ET/11am PT

Energy Storage in Emerging Markets

Thursday, April 25, 2019

2pm ET/11am PT

Storage as a Peaker Replacement

Thursday, October 25, 2018

2pm ET/11am PT

Winds of Change: Global Supply Chain Updates for Energy Storage

Thursday, September 20, 2018

2pm ET/11am PT

Rate Design Trends for Behind-the-Meter Storage

Thursday, July 12, 2018

2pm ET/11am PT

Recordings and slides available at <https://www.strategen.com/webinars>

Stay Tuned for Upcoming Webinars in 2020!



Moderator:

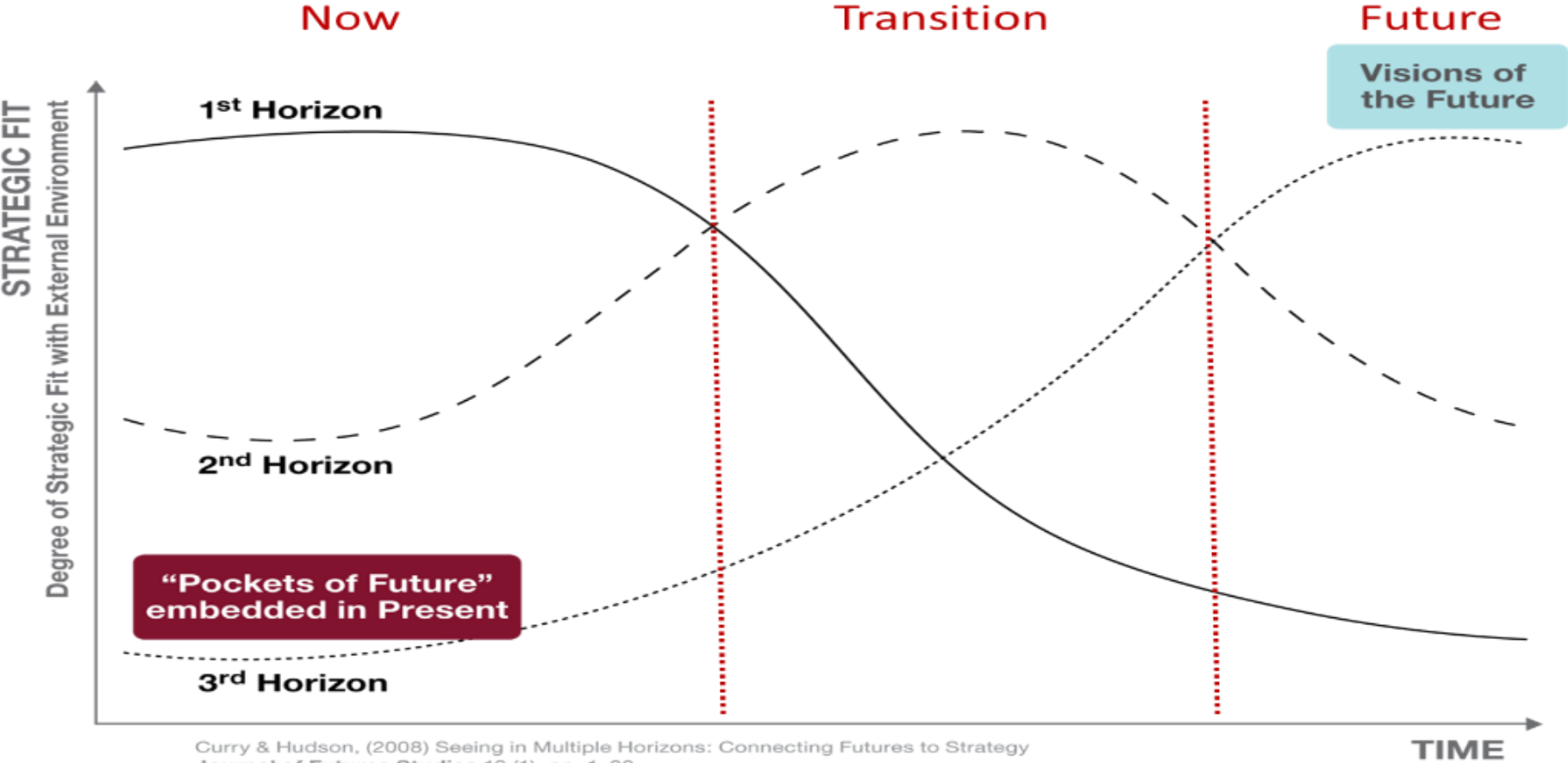
Mark Paterson

Chief Strategy Officer &
Managing Director, Australia Pacific
Strategen



Strategen is a global professional services firm that specialises in accelerating whole-of-system transition to decarbonised, human-centred energy systems.

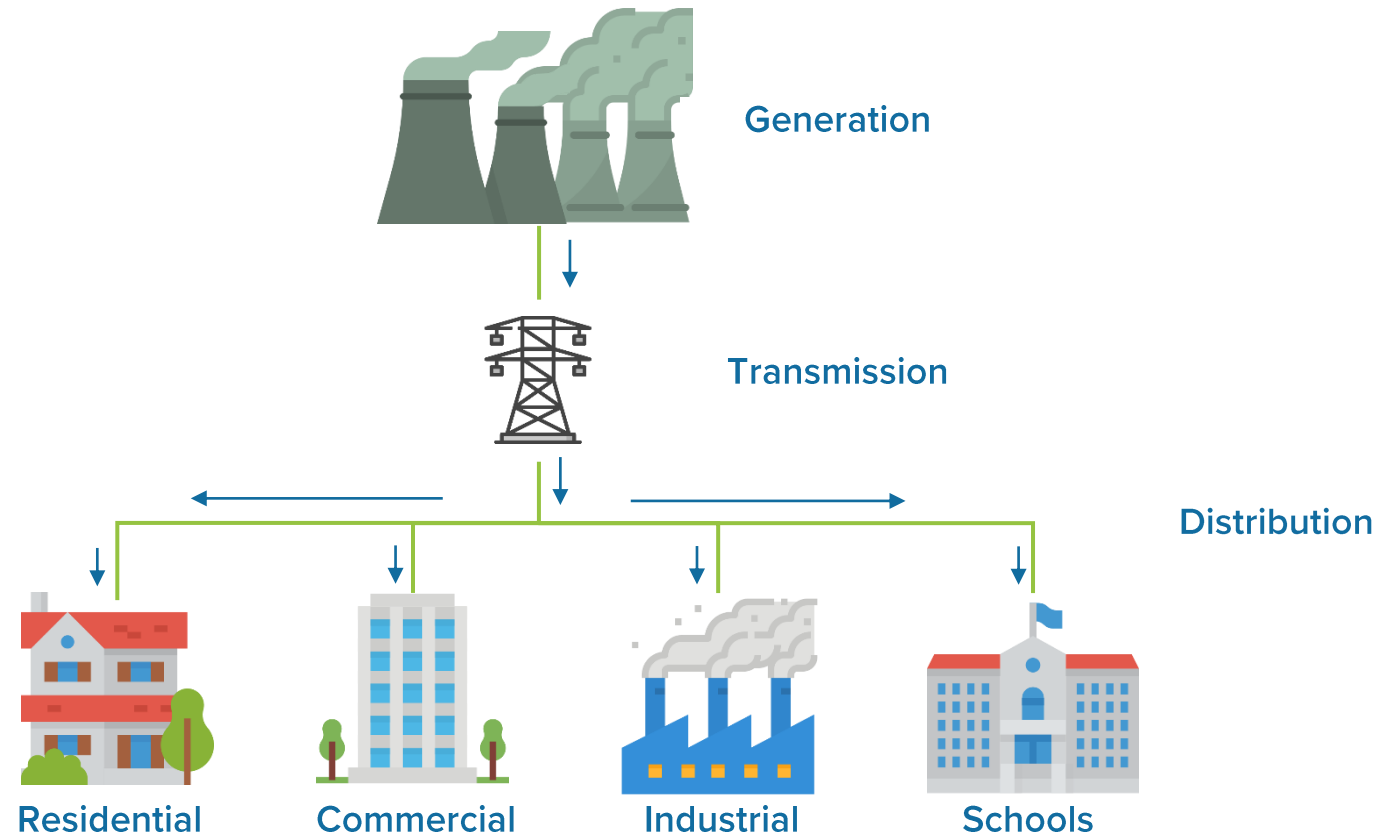
Navigating transition is inherently messy, non-linear and 'emergent' – it requires new models and mindsets



Curry & Hudson, (2008) Seeing in Multiple Horizons: Connecting Futures to Strategy
Journal of Futures Studies 13 (1), pp. 1-20

The 20th century grid

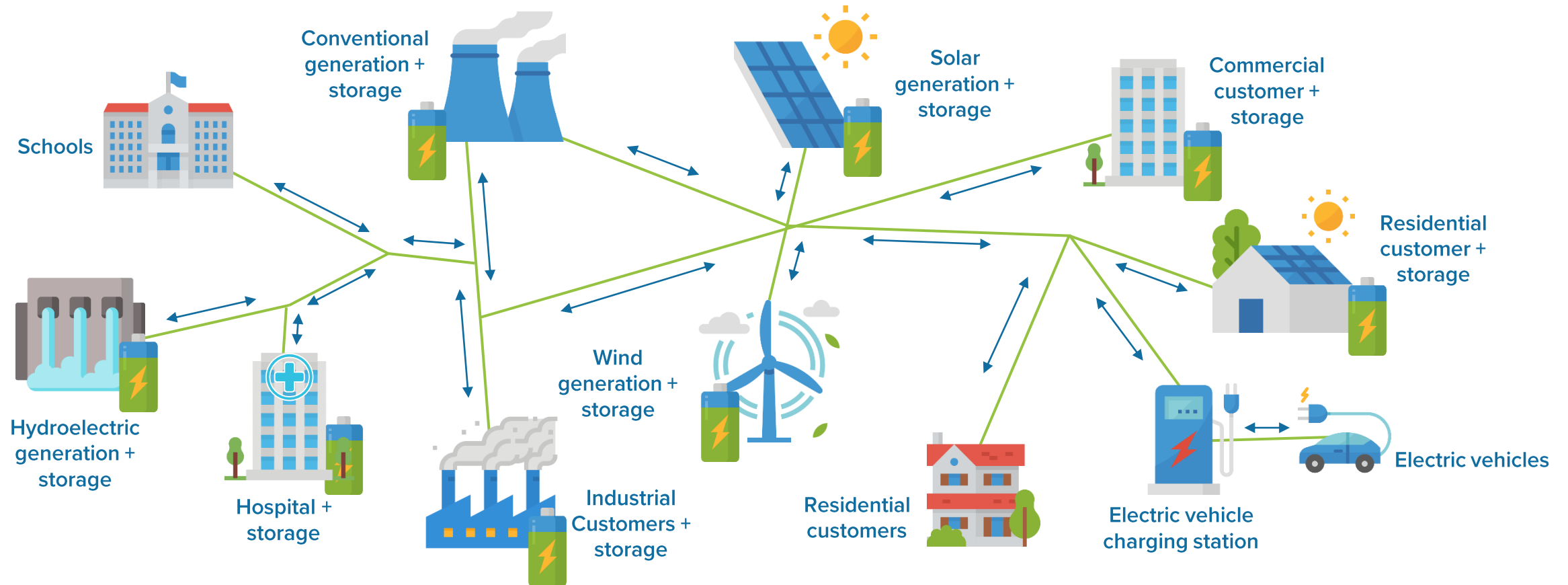
One-way flow of electricity



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The 21st century grid

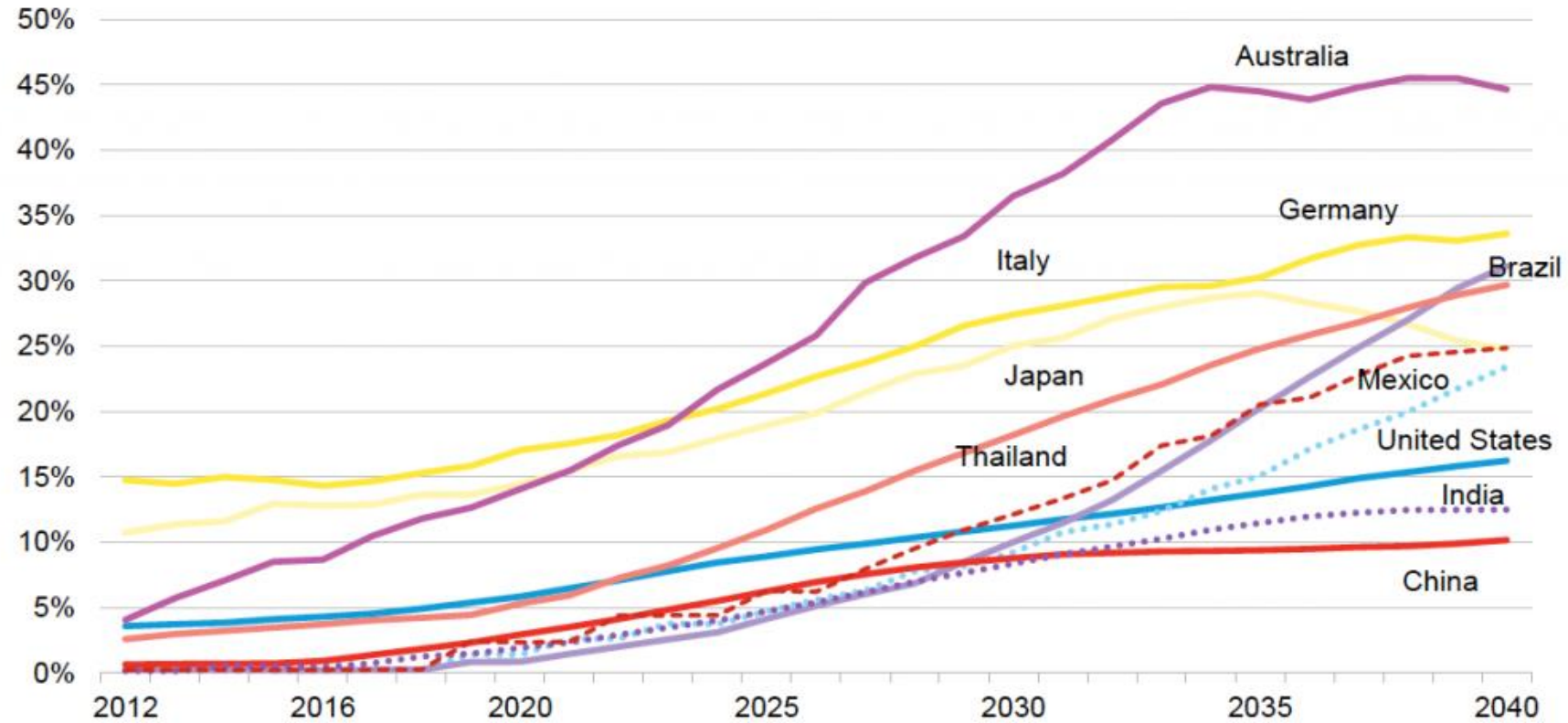
Multi-directional flows of electricity



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Australia's electricity systems are becoming the world's most decentralised *today*

Decentralization ratio



Source: Bloomberg New Energy Finance. Note: decentralization ratio is the ratio of non-grid-scale capacity to total installed capacity.

Meet the high-DER power system of the future...

Distributed RE Generation



Power Electronics



Demand Management & Load Matching



Energy Storage



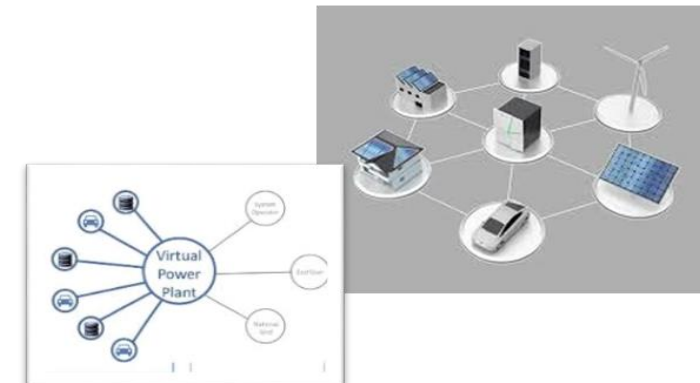
Distributed FF Generation



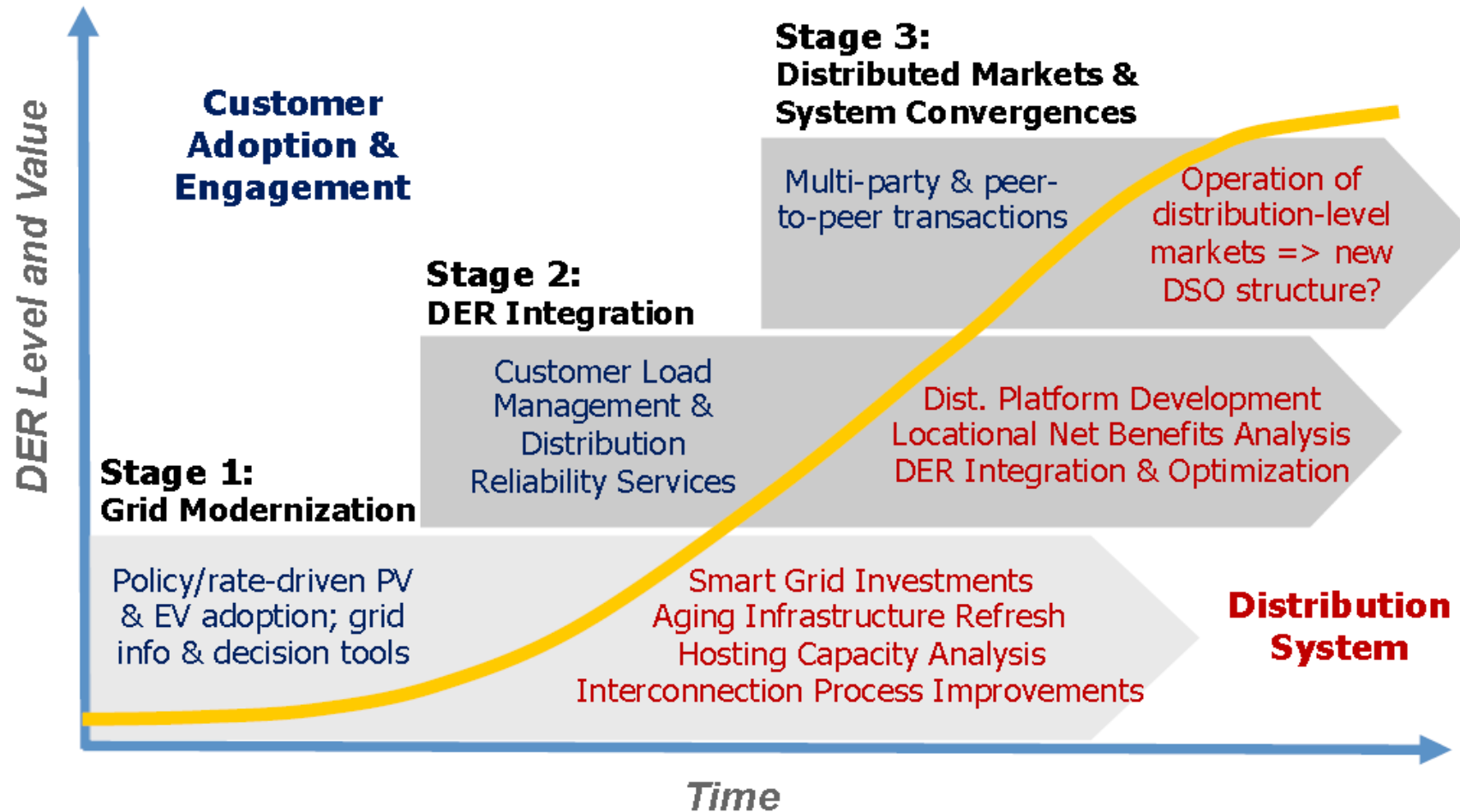
Electric Vehicles



Microgrids & Virtual Power Plants



Comprehending the key stages of a high-DER transition better informs timely, 'right-sized' responses



Source: Distribution Systems in a High DER Future, De Martini & Kristov (2015)



‘Value of DER’ (V-DER) tariffs may be a viable intermediate step for Australia from volumetric tariffs to a more transactive ‘DSO / DMO’ architecture in the longer term.



Presenter:

Ron Nelson

Director

Strategen



STRATEGEN



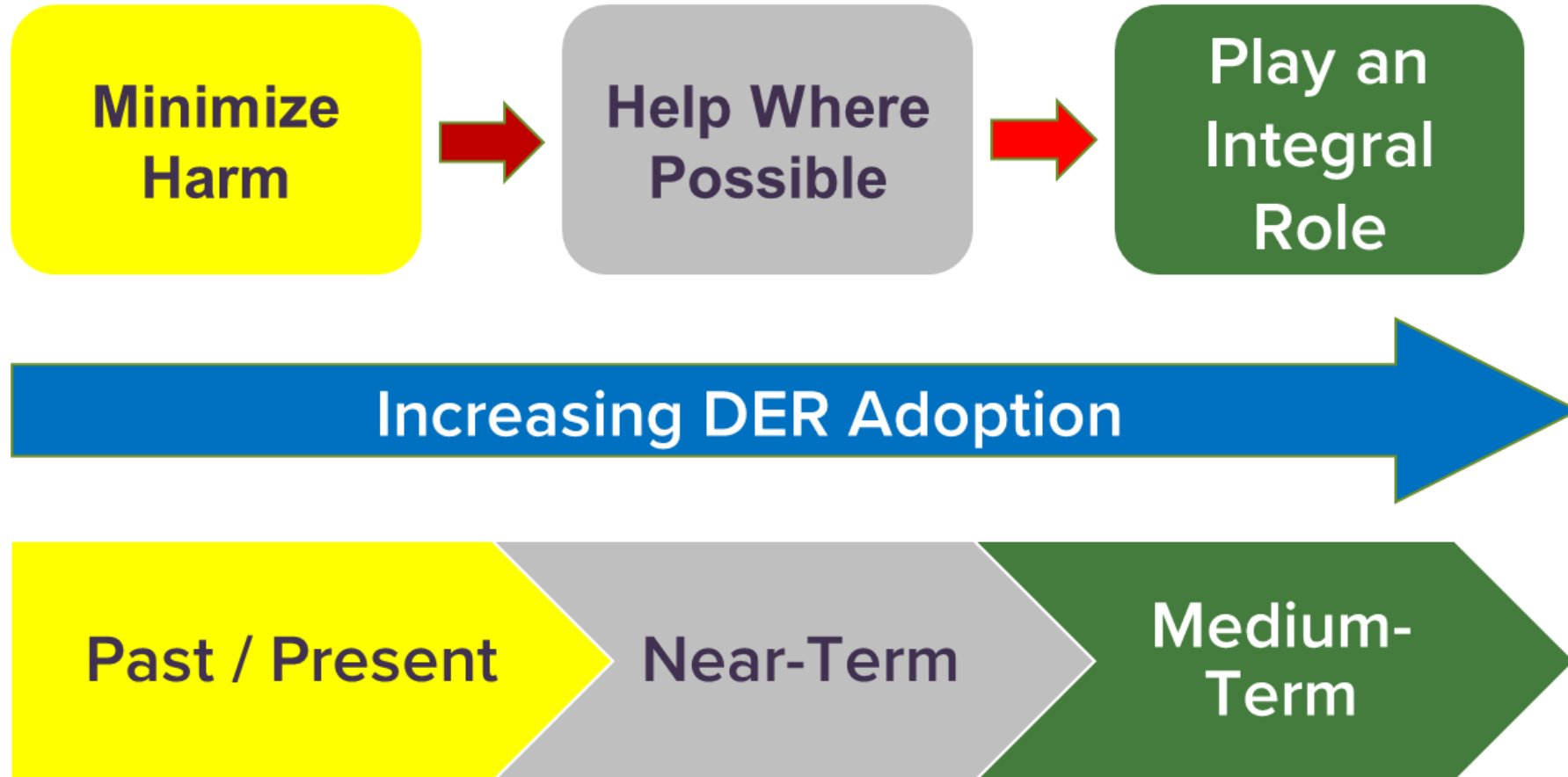
Value of DER Tariffs

Encouraging Good Grid Citizenship

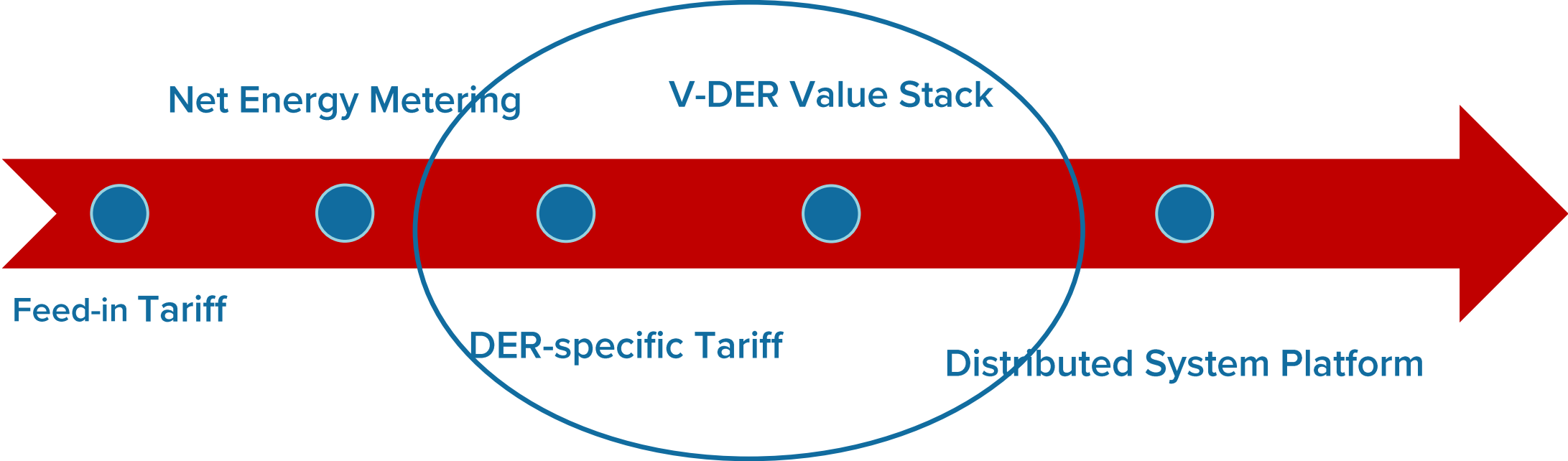
Overview of Presentation

- **The why and how of DER compensation**
- **V-DER tariffs in New York and Hawai'i**
 - Policy context
 - Market structure
 - DER status
 - Overview of the DER compensation roadmap
 - V-DER tariffs
- **Takeaways from both states**
- **Questions & Answers**

Why DER Compensation is Essential



DER Compensation Roadmap



DER compensation should change equitably and incrementally

New York: Policy context

- **Aggressive clean energy goals**
 - 70% clean energy standard by 2030, 100% by 2040
 - 3 GW of energy storage by 2030¹
 - 2.4 GW of offshore wind by 2030
 - Numerous incentives for distribution-sited solar and storage
- **New York Green Bank**
 - \$1 billion state-sponsored clean energy fund

Aggressive policy goals incent clean energy at all levels of the system

1. DPS 18-E-0130 "Order Establishing Energy Storage Goal and Deployment Policy," December 13, 2018
<http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={FDE2C318-277F-4701-B7D6-C70FCE0C6266}>

New York: Market structure

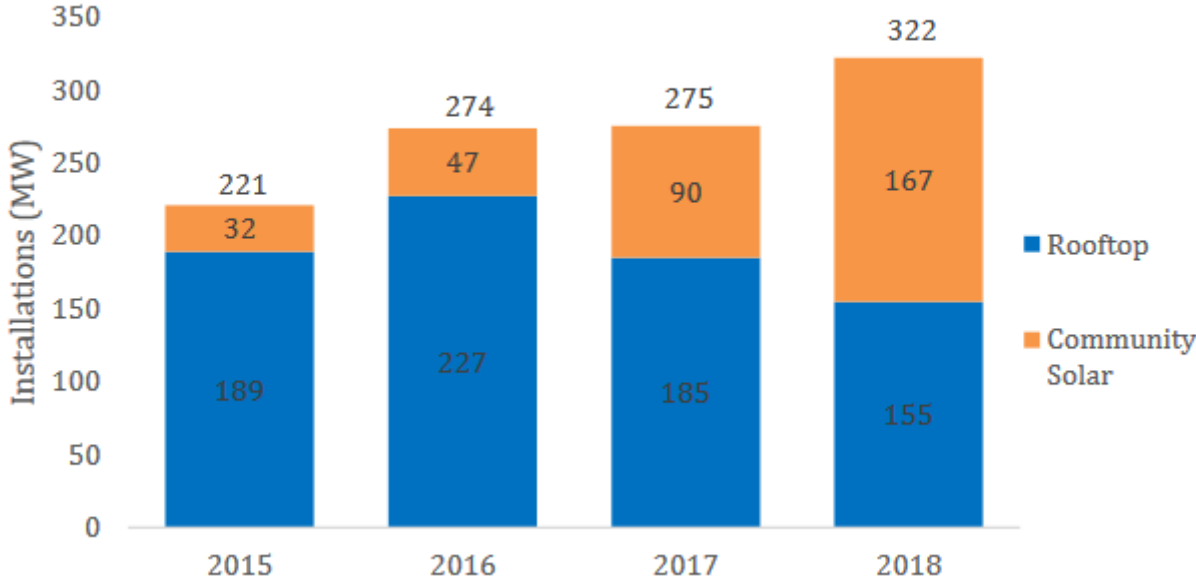


**Reforming the
Energy Vision**

New York: DER status

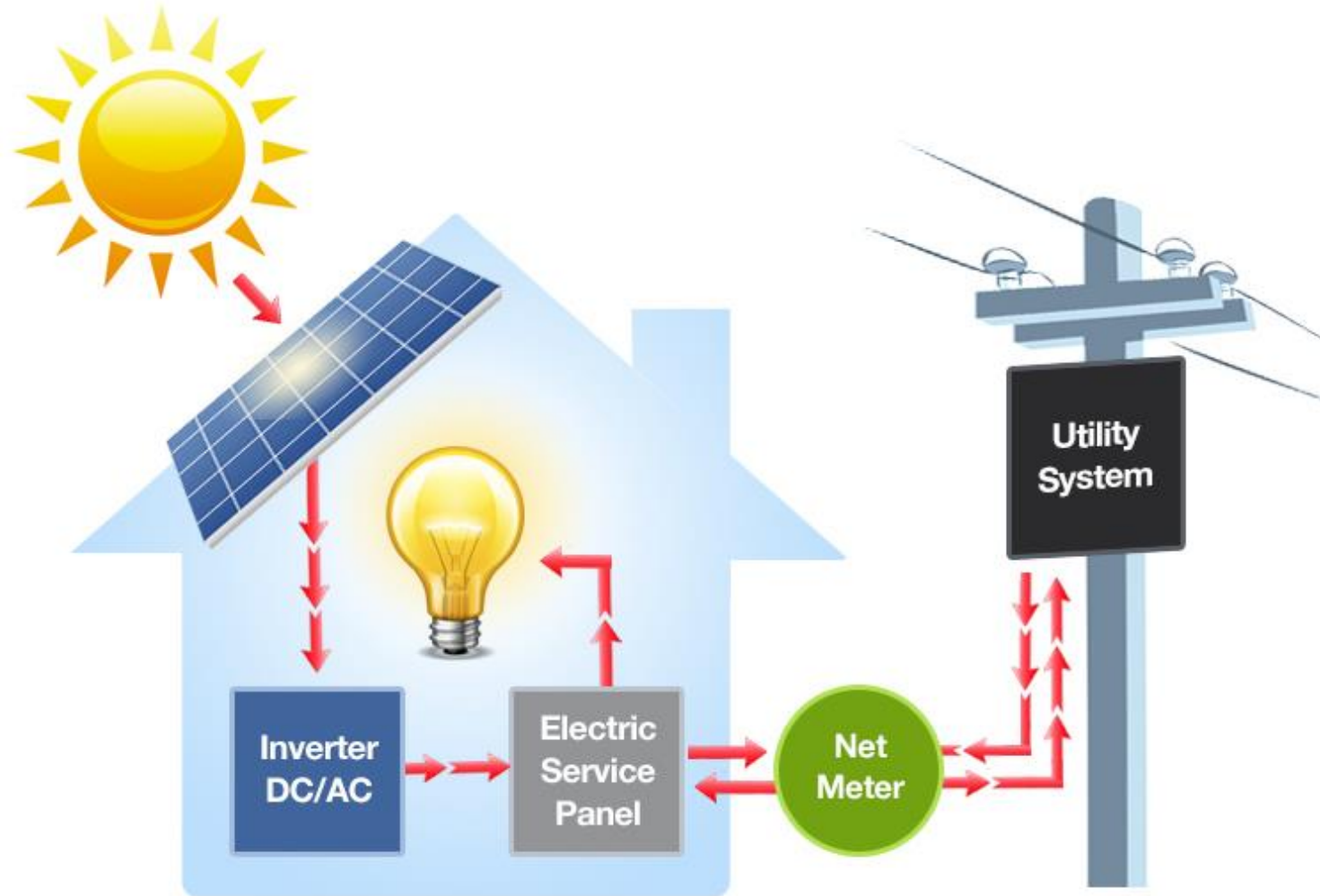
DER represent an estimated 3% of 2019 peak load¹

Annual installed distributed solar PV capacity since launch of REV²



1) NYSERDA, Distributed Energy Resources Characteristic Data, “Capacity of DER Projects by Facility Category” (Accessed February 14, 2020) <https://der.nyserda.ny.gov/data/characteristic/>
2) NY DPS, “Staff Whitepaper on Rate Design for Mass Market Net Metering Successor Tariff,” (December 2019) [http://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/8a5f3592472a270c8525808800517bdd/\\$FILE/NEM%20REplacement%20Whitepaper.pdf](http://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/8a5f3592472a270c8525808800517bdd/$FILE/NEM%20REplacement%20Whitepaper.pdf) at p. 33

New York: Net Energy Metering (NEM)



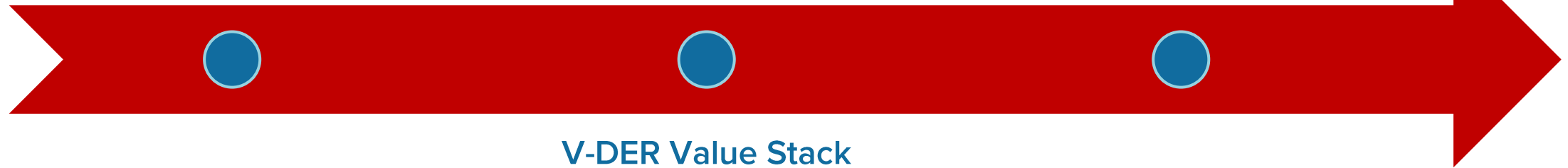
Source: mitechnews.com

New York: DER Compensation Roadmap

Net Energy Metering

Distributed System Platform

- Dual Participation / Integration with NYISO
- Market Design & Integration Working Group



V-DER Value Stack

NEM Phase 1

Non-wires alternatives and
distribution system plans

Transition to a more dynamic and transactive system

Value Stack Compensation for DER

MARKET TRANSITION OR COMMUNITY CREDIT	Value representing gradualism principle. Tranches provide higher degree of certainty to some market participants (i.e., community solar).
LOCATIONAL SYSTEM RELIEF VALUE	Additional distribution value in highly-congested areas
DEMAND REDUCTION VALUE	Value of avoided distribution system costs due to demand reduction
ENVIRONMENTAL VALUE	Value of environmental attributes of the generation: Tier 1 Renewable Energy Certificate (REC) price
CAPACITY	Value of avoided capacity costs: NYISO Installed Capacity (ICAP) calculation
ENERGY	Avoided cost of energy purchases: Location Based Marginal Price (LBMP), day-ahead hourly wholesale energy rate from NYISO

Accurately compensate DER for system and public benefits they provide

VDER Value Stack: Capacity (ICAP)

- Initially, Installed Capacity (ICAP) value was calculated separately by each utility and published in each utility's VDER tariff. Resulted in significant differences across utilities in the same capacity zone (region).
- Currently, ICAP value is calculated based on actual NYISO monthly spot market prices
- **Projects can choose between three values:**
 - Alternative 1: \$/kWh injected to the grid per year
 - Alternative 2: \$/kWh injected to the grid during peak windows in the year. This value is higher than Alternative 1.
 - Alternative 3: \$/kW injected during single peak hour of the year. Mandatory for projects with energy storage.

ICAP evolved to be reflective of more transparent data

V-DER Value Stack: DRV and LSRV

- Demand Reduction Value (DRV) is based on marginal cost of service (MCOS)
- Previously, DRV and Locational Service Relief Value (LSRV) were paid on performance over 10 peak hours of the year. This resulted in uncertain revenue streams, as 10 peak hours is difficult to predict.
- Currently, DRV is paid on performance over a known peak window (e.g., 2-7pm during summer weekdays)
- Currently, LSRV is based on at least 10 utility call events per year. Each event will occur during a DRV window, will have 1-4 hours in duration, and compensation will be based on lowest hourly kW injection during a call window
- Regulatory staff have recommended sunseting the LSRV, stating that “current distribution system plans, resulting non-wires alternatives procurements, and demand response programs are proving more effective tools to address this more complex set of problems and value.”¹

Distribution value can be challenging to get right through a V-DER tariff

1) NY PSC Case 15-E-0751 Whitepaper Regarding Future Value Stack Compensation, Including for Avoided Distribution Costs, December 12, 2018
[http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=\[5DE69B8A-D3FB-44BA-95C0-7B4EB4FFCAAF\]](http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=[5DE69B8A-D3FB-44BA-95C0-7B4EB4FFCAAF])

V-DER Value Stack: Acknowledging Complexity

- In December of 2019, the Commission extended NEM Phase 1 from January of 2020 to January of 2021 for projects under 750 kW
- Staff found that “NEM provides a simple and convenient way for adopters of onsite distributed energy resources (DER) to be compensated for the benefits provided to the grid.”¹
 - Provide additional NEM options with time-of-use and stand-by rates
 - Charge NEM facilities a for public benefit funds that are otherwise avoided by using NEM
- **VDER value stack is still an option**

New York has extended a simplified DER compensation option

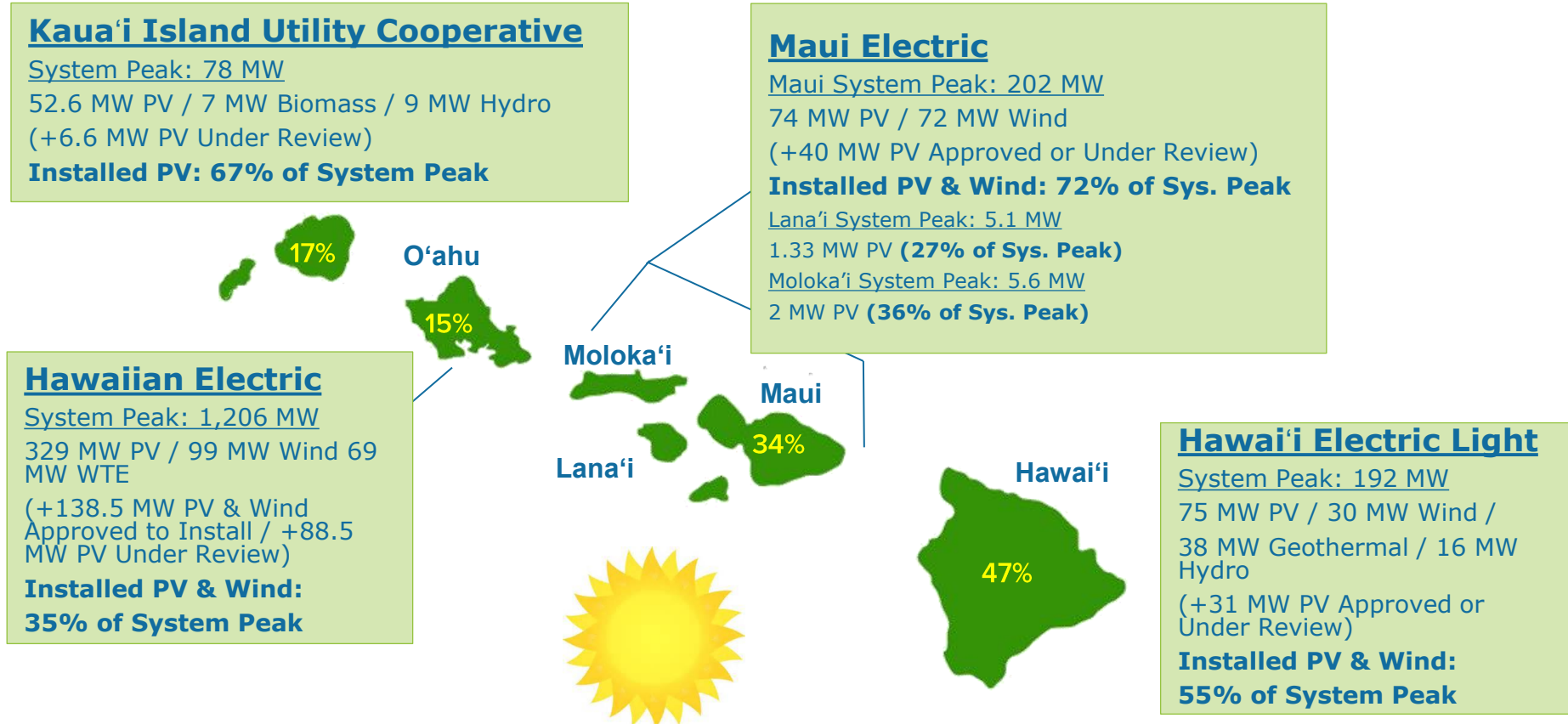
1) Staff Whitepaper on Rate Design for Mass Market Net Metering Successor Tariff

Hawai'i: Policy context

- **Aggressive clean energy goals**
 - Renewable Portfolio Standard:
 - 2020 – 30%
 - 2030 – 40%
 - 2040 – 70%
 - 2045 – 100%
- **Performance-Based Regulation (PBR) Docket 2018-0088**
 - Established three guiding principles, three regulatory goals, twelve priority outcomes
 - Regulatory goals:
 - Enhance Customer Experience
 - Improve Utility Performance
 - Advance Societal Outcomes

Policy goals increase pressure to price DER equitably and efficiently

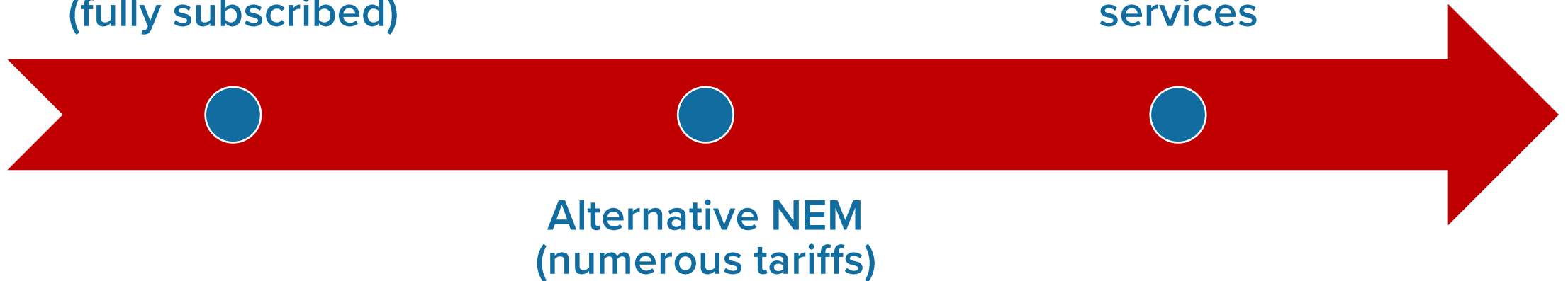
Hawai'i: Market Structure and DER Status



Hawai'i: DER Compensation Roadmap

Net Energy
Metering
(fully subscribed)

Simplified pathways
to procure grid
services



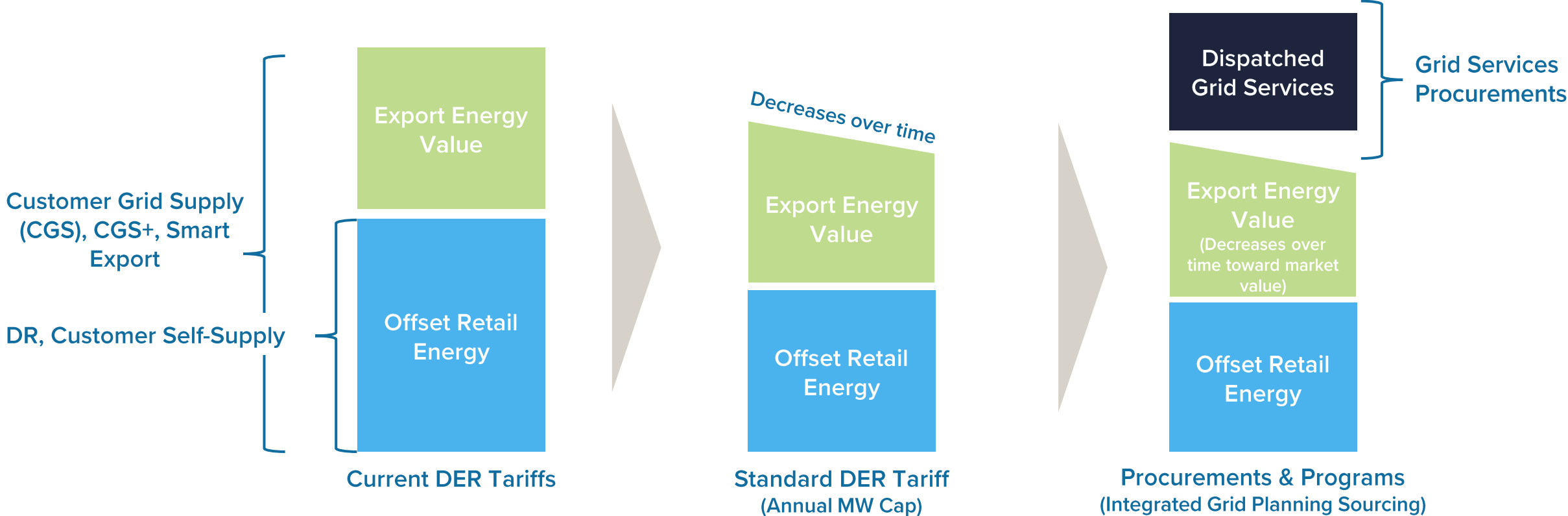
Transitioning to a more simplified approach for compensating DERs

Hawai'i: NEM alternatives

- **Customer-Self Supply (CSS)**
 - Customer is not compensated for electricity exported to the grid
 - \$25 residential minimum bill
- **Smart Export (SE)**
 - Designed with solar PV + storage in mind
 - Advanced inverter functions
 - Energy credits for grid export from 4pm to 9am
 - Smart net meter
- **Customer-Grid Supply (CGS) and Controllable CGS (CGS+)**
 - Direct-to-grid
 - Communication and control requirement to reduce system output when needed (CGS+)
 - Advanced inverter functions (CGS+)
- **Community-based Renewable Energy (CBRE)**

Alternative NEM tariffs provide options and focus on different use-cases

Hawai'i: Standard DER Tariff



1. Adapted from Docket No. 2019-0323. HECO DER Policies Companies' Advanced Rate Design Strategy September 25, 2019.

Hawai'i: Bundled grid services tariff

- Compensation based on kW availability of DER
- Utility would have complete control of the resource
- Tariff could be structured with a fixed charge with a monthly kWh energy cap

Operational and market complexities may lead to simplified tariff structures

1. Docket No. 2019-0323. HECO DER Policies Companies' Advanced Rate Design Strategy September 25, 2019.

Key Takeaways: NY and Hawai'i V-DER Tariffs

- **Emerging best practices**

- Multiple stages to allow V-DER tariffs to evolve
- Smooth glidepath for market transition
- Multiple tariff options for customers to choose from
- Caps on available MW for DER tariffs
- V-DER tariff is one component of a comprehensive DER integration plan

- **Tradeoffs**

- Precision versus simplicity

- **Grid planning processes are key to procuring certain DER grid services**

DER compensation roadmaps are essential to building political and stakeholder support



Leveraging and customising international best practice is critical to 'leapfrog' unnecessary duplication and expense in the most systemic transformation since Edison and Tesla.

Q & A



Thank you!

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