Best practices, current trends, and recommendations

OEB Stakeholder Meeting – Utility Remuneration and Responding to Distributed Energy Resources

September 18, 2019

CanSIA
CANADIAN SOLAR INDUSTRIES ASSOCIATION | L'ASSOCIATION DES INDUSTRIES SOLAIRES DU CANADA

PRESENTATION OVERVIEW

- CanSIA's view on OEB's Questions:
  - What specific problems or issue should each initiative address?
  - What objectives should the Utility Remuneration and Responding to DERs initiatives aim to achieve?
  - What principles should guide the development and selection of policy options?
- Consideration of industry trends, lessons learned and best practices

What specific problems or issue should each initiative address?

Responding to DERs	Utility Remuneration
Distribution System Planning (e.g., DER integration and optimization, etc.)	Continued evolution of remuneration frameworks (e.g. shared savings mechanisms, performance incentive mechanisms, etc.)
DER connections*, hosting capacity and information sharing	Costs allocations, pricing and rate design
Coordination at the transmission-distribution interface	Non-wires alternatives sourcing (e.g., treatment of capex/opex, procurement practices, etc.)

*DER Connection Review (EB-2019-0207)

What objectives should the Utility Remuneration and Responding to DERs initiatives aim to achieve?

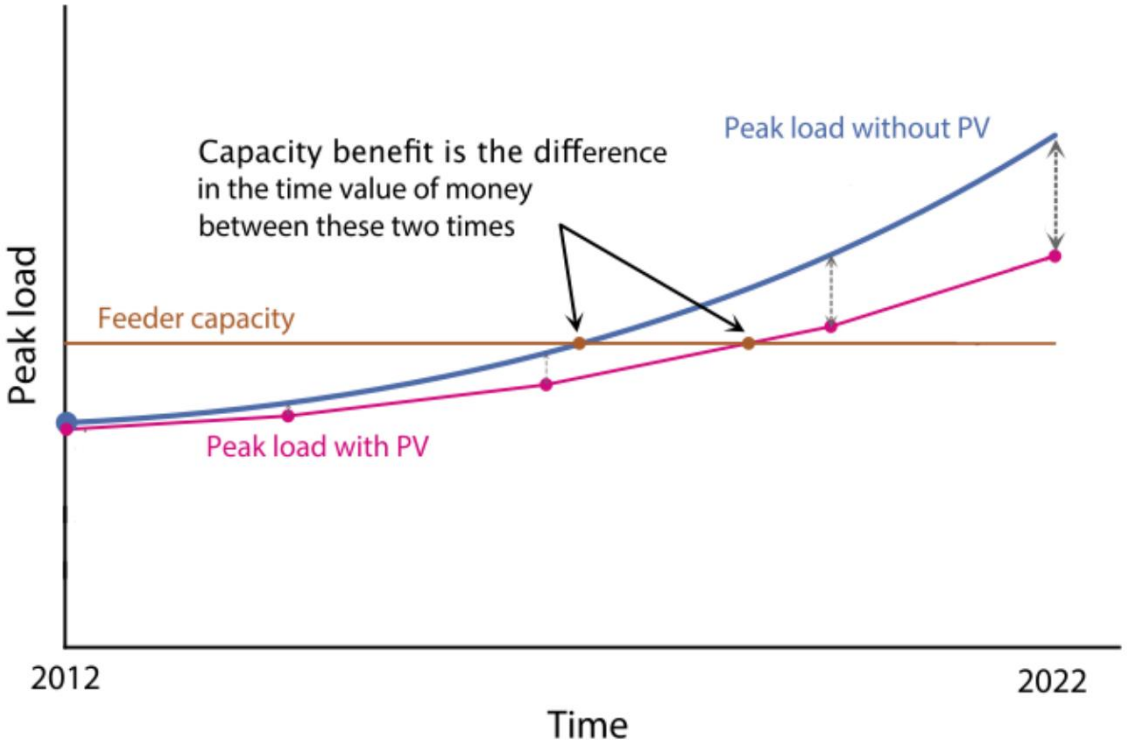
- Customer-centric approach that recognizes the value of DERs and ensures that benefits are realized by all customers
- Improved planning and coordination amongst the industry (e.g., LDCs, IESO, OEB, Government, and customers) on matters related to power system planning, DER integration, operability, etc.
- Common understanding of technology capabilities, challenges and solutions to be implemented
- Establishment of clear investment signals for customers and DER solutions providers
  - Transparency in data and decision-making
  - Enduring and predictable
- Framework for future grid upgrades (i.e., not just for the purpose of one project, enabling private sector investment, etc.)

What principles should guide the development and selection of policy options?

- Ensure protection of customer investment in response to price signals (e.g., managing how changes are implemented recognizing customers investment is not protected by “change of law” contract provisions)
- Promote competition and enable market-forces to drive lowest cost solutions
- Be understandable and addressable by customers
- Encourage economic efficiency
- Consider broader system-wide costs and benefits

Best Practices and Industry Trends

DISTRIBUTION CAPACITY DEFERRAL VALUE OF SOLAR

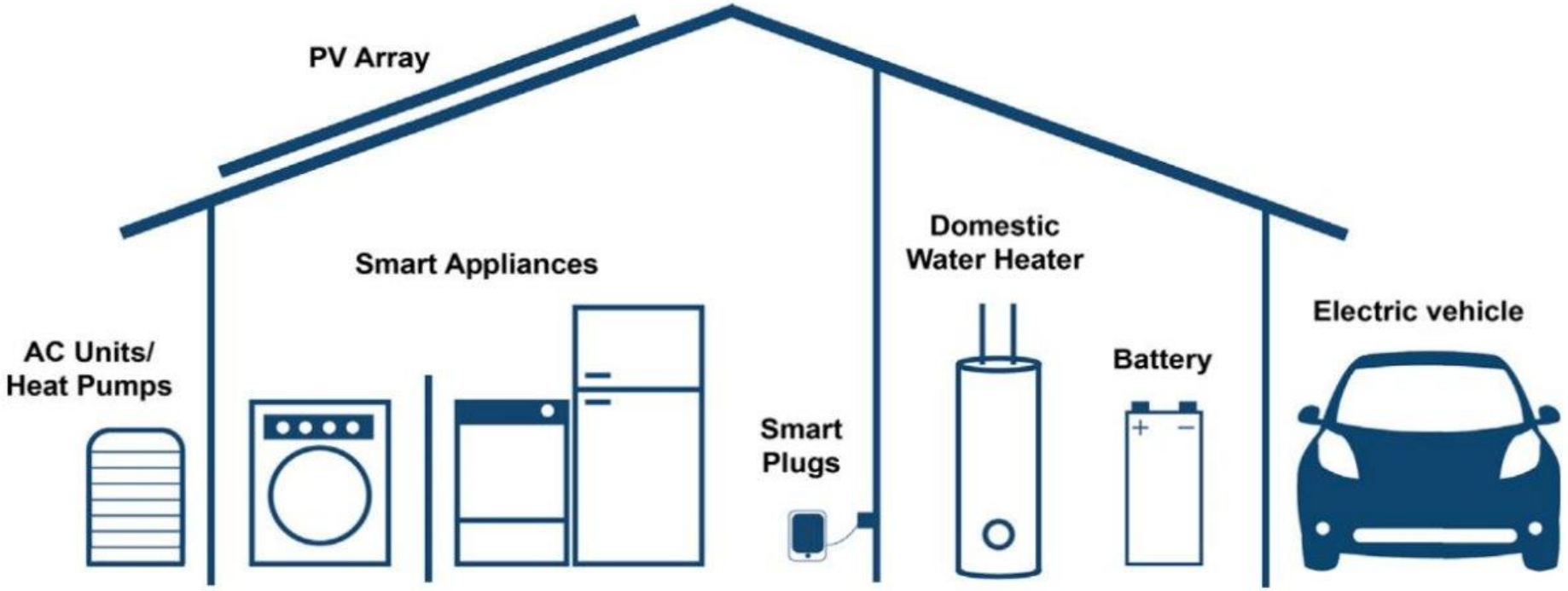


The deferral value would be greatest where the current peak load is near the capacity of the distribution feeder and where the solar is coincident with the peak load on the feeder

Mills, A., Barbose, G., & Seel, J. (2016). Planning for a Distributed Disruption: Innovative Practices for Incorporating Distributed Solar into Utility Planning. Washington, D.C.: Office of Energy Efficiency and Renewable Energy.

VALUE OF SOLAR AND "SOLAR PLUS" SOLUTIONS

- The value of solar to the customer can be increased by controlling and temporally shifting electricity output using energy storage and other load control devices, an approach referred to as "solar plus"



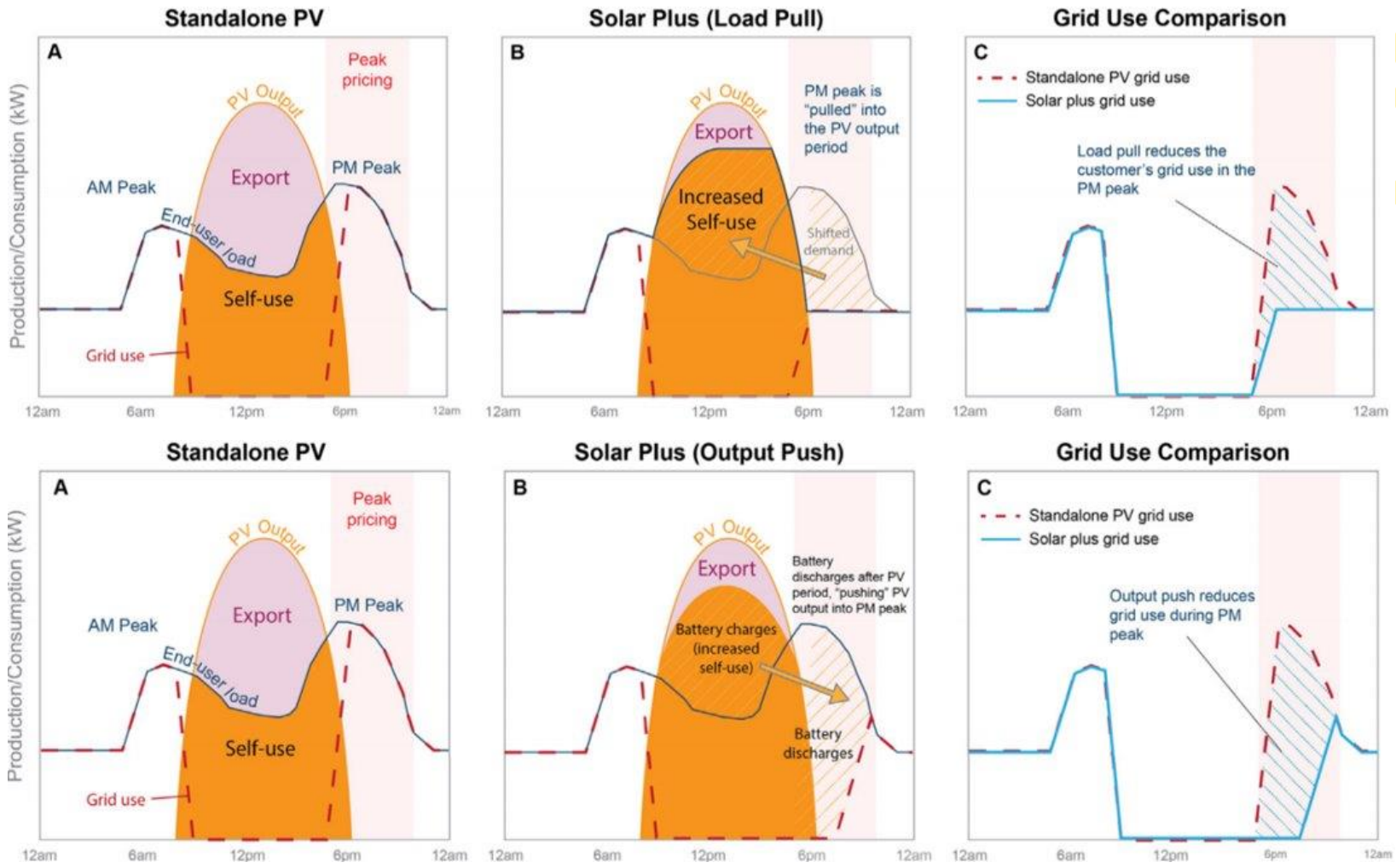
O'Shaughnessya, E., Cutler, D., Ardani, K., & Margolis, R. (2018). Solar plus: A review of the end-user economics of solar PV integration with storage and load control in residential buildings. Applied Energy, 2165–2175. Retrieved from https://www.osti.gov/pages/servlets/purl/1417734

CUSTOMER BENEFITS OF “SOLAR PLUS”

- O'Shaughnessya et al (2018) show that “solar plus” can increase on-site solar use and that these benefits can justify the incremental costs of “solar plus” devices for a variety of technologies (e.g., batteries, smart appliances, smart plugs, air conditioning units, hot water heating, electric vehicles), geographies, and customer load profiles

- Customer benefit associated with “solar plus” is greatest when:
  - electricity output is sold to the grid at a lower value than the customer’s retail rate
  - time-of-use rates peak periods do not coincide with solar output
  - demand charge rates for load peaks do not coincide with solar output, and
  - electricity delivery charge rates are significant and/or vary with consumption

LOAD “PUSH” VS. “LOAD PULL”



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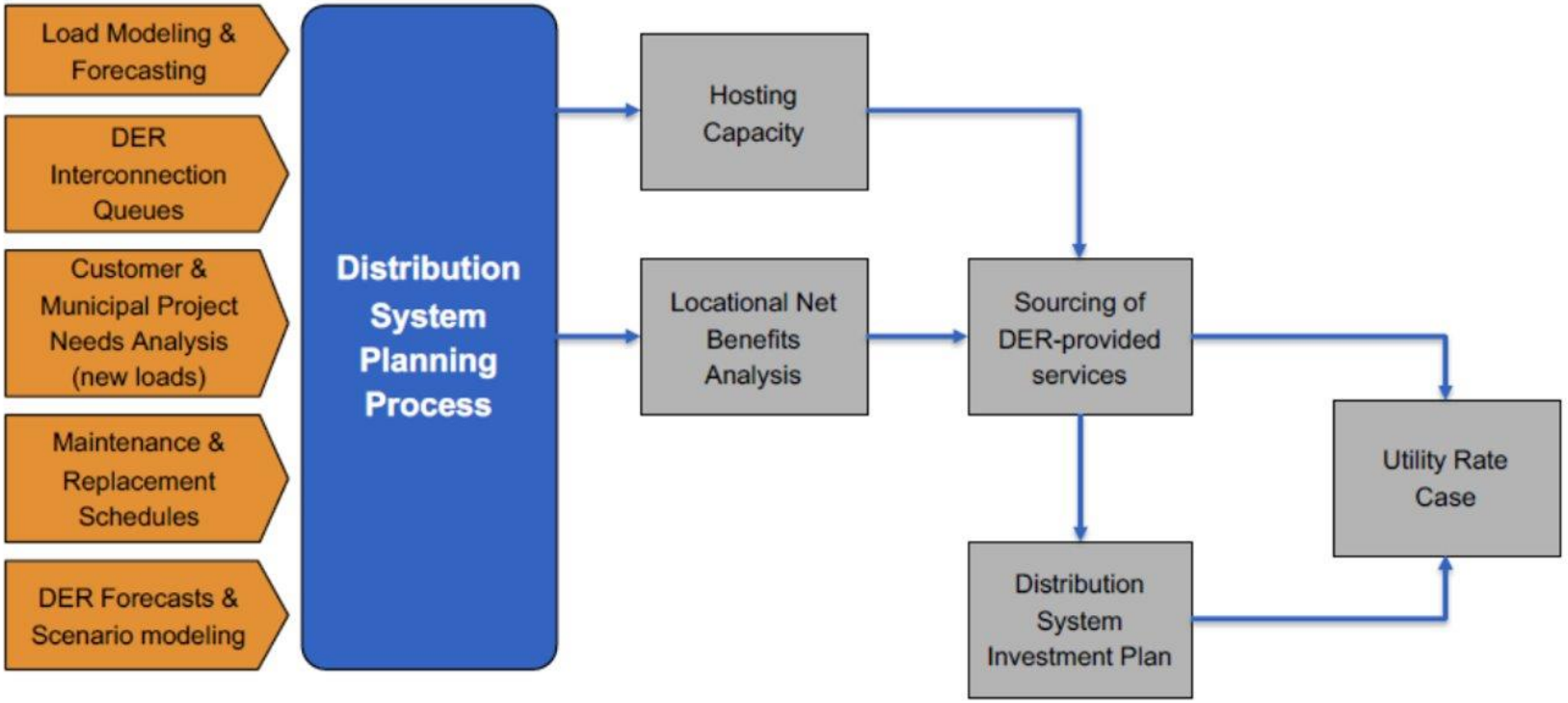
BEST PRACTICES FOR DISTRIBUTION SYSTEM PLANNING

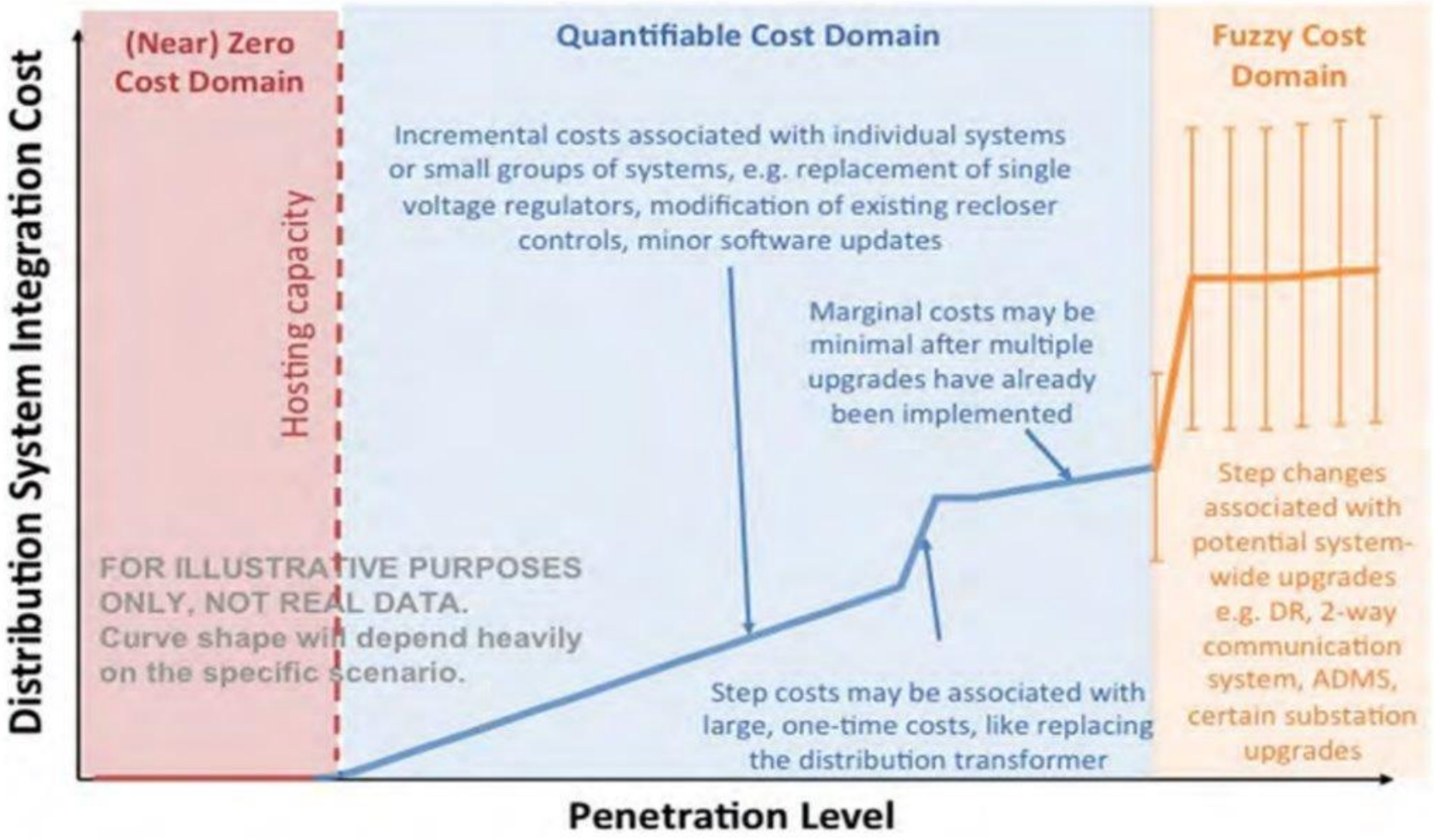
- Framework outlined by the Advanced Energy Economy (AEE) in 2018:
  - Encourage DER to be sited in areas where it can be most beneficial to the grid
  - Make hosting capacity and non-wires solicitation information available to participants
  - Build appropriate transparency into the planning process (catalyst for innovation and private capital investment that complements utility investment)
  - Owners/operators of non-utility DERs that provide grid services should be provide appropriate information that allows the utility to optimize their value for the benefit of all customers

BEST PRACTICES FOR DISTRIBUTION SYSTEM PLANNING



Advanced Energy Economy. (2018, June 29). Distribution System Planning: Proactively Planning for More Distributed Assets at the Grid Edge. Retrieved from https://info.aee.net/21ces-issue-briefs

ADDRESSING INTEGRATION COSTS



Horowitz, K. A., Palmintier, B., Mather, B., & Denholm, P. (2018). Distribution system costs associated with the deployment of photovoltaic. Renewable and Sustainable Energy Reviews, 90, 420-433. Retrieved from https://www.peakload.org/assets/resources/NREL%20PV%20Cost%20Paper%202018.pdf

THANK YOU

- CanSIA looks forward to the next steps!
- Questions?