INTERCONNECTION INNOVATION e-XCHANGE
U.S. DEPARTMENT OF ENERGY

Distribution-Level Queue Management Cost Allocation Solution e-Xchange

COST ALLOCATION APPROACHES

6/21/23

An initiative spearheaded by the Solar Energy Technologies Office and the Wind Energy Technologies Office

Meeting Notes: Notes synthesizing key points, insights and questions from the meeting can be found via the BOX link here: https://app.box.com/s/ia96wk0rs8skii7zhgv581zdpkbnq9ja

Virtual Meetings Code of Conduct

Mentimeter

1. *Please introduce yourself with name, title, organization*
2. *Assume good faith and respect differences*
3. *Listen actively and respectfully*
4. *Use "Yes and" to build on others' ideas*
5. *Please self-edit and encourage others to speak up*
6. *Seek to learn from others*

Mutual Respect . Collaboration . Openness

Interconnection Innovation e-Xchange (i2X)

Mentimeter

Mission: To enable a **simpler**, **faster**, and **fairer** interconnection of clean energy resources while enhancing the **reliability**, **resiliency**, and **security** of our **distribution and bulk-power electric grids**

Stakeholder Engagement

Nation-wide engagement platform and collaborative working groups

Data & Analytics

Collect and analyze interconnection data to inform solutions development

Strategic Roadmap

Create roadmap to inform interconnection process improvements

Technical Assistance

Leverage DOE laboratory expertise to support stakeholder roadmap implementation

energy.gov/i2x

i2X INTERCONNECTION INNOVATION e-XCHANGE U.S. DEPARTMENT OF ENERGY

Key Outcomes from i2X e-Xchange Meetings

Mentimeter

- Inform and formulate a ***publicly available, strategic roadmap*** for interconnection
  - Topical challenges and issues
  - Practical solutions to implement and scale
  - Knowledge and data gaps and new solutions to pilot
  - Success goals and measures of success
- Summary documentation for each meeting regarding ideas discussed and opportunities for targeted stakeholder action
- Provide platform for ongoing engagement before and after meetings
- **Longer term vision** → Solution e-Xchanges to continue building a national forum for all stakeholders as a community of practice, excellence, and innovation

i2X Solution e-Xchange Topic Areas

Mentimeter

- **Queue Management and Cost Allocation**
  - Technology, regulation, administration, and organizational change focus
  - *What* innovative interconnection solutions exist?
- **Grid Engineering Practices and Standards**
  - Engineering and technology focus
  - *How* can proposed solutions be executed?
- **Equity and Energy Justice**
  - Multidisciplinary
  - *Who* is impacted by and benefits from proposed solutions?
- **Data Transparency**
  - Multidisciplinary
  - *What* transparency concerns must be addressed?
- **Interconnection Workforce and Training**
  - Multidisciplinary

Additional subjects, like capacity maps, cross these topics and will be addressed from these different perspectives. Follow the schedule of events on the i2X website.

Upcoming 2023 Partner Events

Mentimeter

- 8/4 i2X-NERC EMT Bootcamp session #1 (NERC's EMTTF). 4hr virtual
- 9/11-13 RE+ Workshop. Las Vegas, NV
- 9/14 i2X-NERC EMT Bootcamp session #2 (NERC's EMTTF). 4hr virtual
- 10/23-25 GridTECH Connect NE. Newport, RI
- 10/23-26 ESIG Fall Workshop. San Diego, CA
- 11/8-9 IREC Vision Summit 2023. Minneapolis, MN

Mentimeter

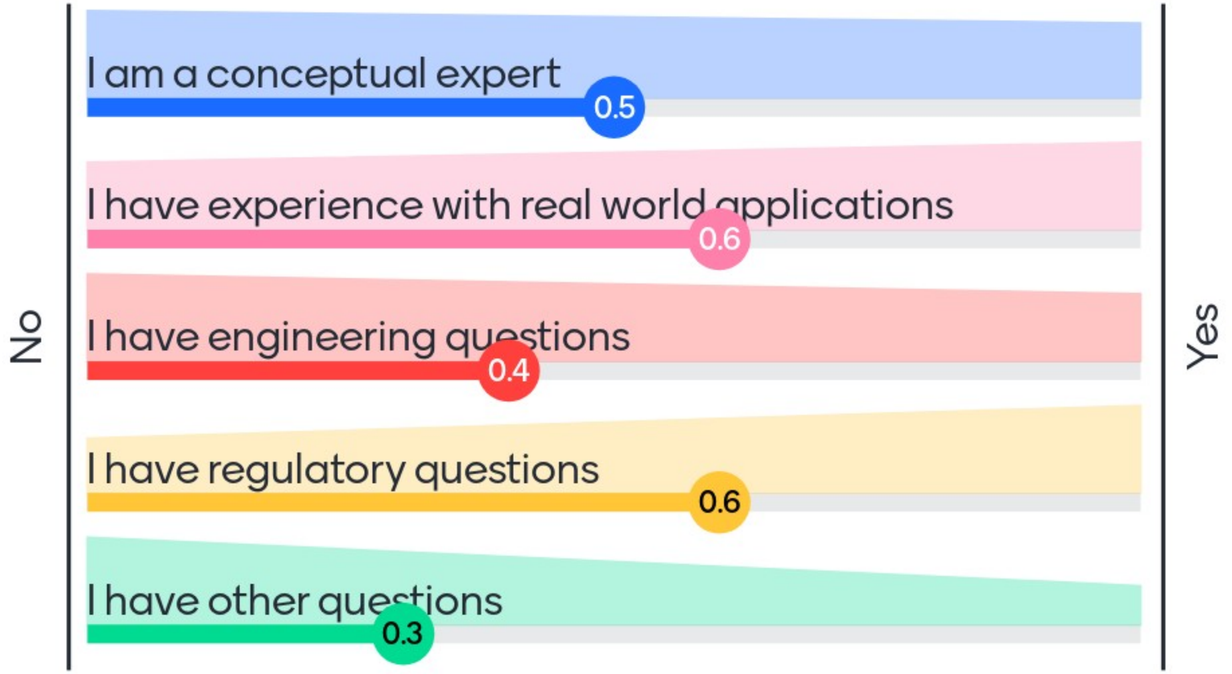
Agenda

- **Innovation Presentations**
  - **Jeffrey Roark**, Technical Executive for Power Delivery and Utilization, EPRI
    - EPRI, 2020: Principles of Access for Flexible Interconnection: Cost Allocation Mechanisms and Financial Risk Management
  - **Rosemary Jojić**, Principal Policy Analyst, PEPCO
  - **Derek Duran**, Rate Analyst, MN PUC
- **Interactive Discussion (60 min)**

Instructions

Your answers will appear ANONYMOUS to other participants. Only i2X leaders will see your contact information.

What is your familiarity with IX cost allocation?



What does innovative cost allocation mean to you? What ideas or questions do you have?

36 Answers

concerned with equity issues

Moving beyond the Cost Causer Pays model

Allocating costs between developers, ratepayers, utilities. What is a fair share per entity?

Centered Around Distributive Justice

Proactive distribution planning to accommodate DER expansion in the rate base.

Energy Justice

transparency and equity

use of smart inverters first, ensure not circuit closures, plan for the future

front loading upgrades in needed area and paying for them overtime

What does innovative cost allocation mean to you? What ideas or questions do you have?

36 Answers

I think interconnection cost allocation issues is fundamental to achieving electric decarbonization

Fairest interconnections

Equitable way between utilities, customers, developers to get as many MWs of clean energy on the grid ASAP

Fair allocation of costs between interconnection customers and between IX customers and ratepayers to recognize system / environmental / ratepayer benefits and efficient grid operations.

1) options for public or socialized funding for planned, long-term grid upgrades related to growing load and renewable energy

Reimbursements for improving the grid

How do future beneficiaries get concidered?

No one size fits all. Every state has its own regulations and cost allocation needs to be tailored to those stakeholders

identifying costs that holding back part of the grid and solving them proactively to enable generation

What does innovative cost allocation mean to you? What ideas or questions do you have?

36 Answers

How can we use planning and policies to minimize high costs for interconnection?

reliability impacts

The question is how to promote forward-thinking investments w/out ratepayers taking on too much of the risk of imprudent spending.

Recognizing that everyone benefits from more clean DG on the grid and thus everyone should contribute to it

An allocation methodology that accelerates DER adoption and appropriately funds grid infrastructure, communications, and control systems

Allocation that doesn't slow development

Standardized way that enables much faster connections where capacity is limited or zero

A centralized government agency at the federal level to plan inter-regional transmission lines.

Cutting edge: cost sharing for proactive distribution system upgrades, sharing among all those who benefit (including ratepayers) -- i.e., "multi-beneficiary" cost sharing

What does innovative cost allocation mean to you? What ideas or questions do you have?

36 Answers

Upfront capital costs should (to the greatest extent possible) not limit a long term "good" project from going forward.

DER expansion - costs on all ratepayers in modern network? Equity issues

Future cost recovery models for utilities

Sharing of risk

Grid Modernization

What conditions are needed to apply Innovative Cost Allocation?

Balancing need to allocate costs equitably with need to drive cost effective design

What are the benefits of various types of upgrades and to whom do they accure?

I think it would be helpful from a utility/regulatory perspective to have more transparency on what price points pencil out for developers, to better develop policies to make projects feasible

Guest Presentations

Instructions

Do you have any questions for our presenters?

2 Answers

No

Utility scale projects are refunded for upgrades they pay for if they benefit the grid. Residential customers that pay for upgrades are improving the distribution grid, why are they not reimbursed?

What cost allocation approaches have been piloted or implemented?

6 Answers

Cost Sharing 1.0 (retroactive cost sharing) has not worked, as no one will pay the $ up front in the hopes that someone will follow and reimburse them

Cost Sharing 2.0 (prospective cost sharing) was implemented in NY, but the jury remains out as to if it will be a success as distributed projects are increasingly triggering transmission upgrades

MA's DPU 20-75 CIP in the Marion Fairhaven group was the first instance of Multi-Beneficiary Cost Sharing, but there is significant uncertainty of whether other CIPs will be approved

Best practice: Massachusetts "Capital Investment Plan" framework for cost allocation allocates infrastructure upgrade costs between current Interconnecting Customers (ICs), future ICs, and ratepayers

From a regulatory/utility perspective, it would be helpful to get more transparency on what price points pencil out for developer projects, to better create cost allocation policies to drive IXs

In terms of cluster studies cost allocation by MW has the potential to shift significant cost from one location to another, when projects are scattered across the feeder, and not on the same mainline

What conditions are needed before implementing innovative cost allocation on the distribution system?

4 Answers

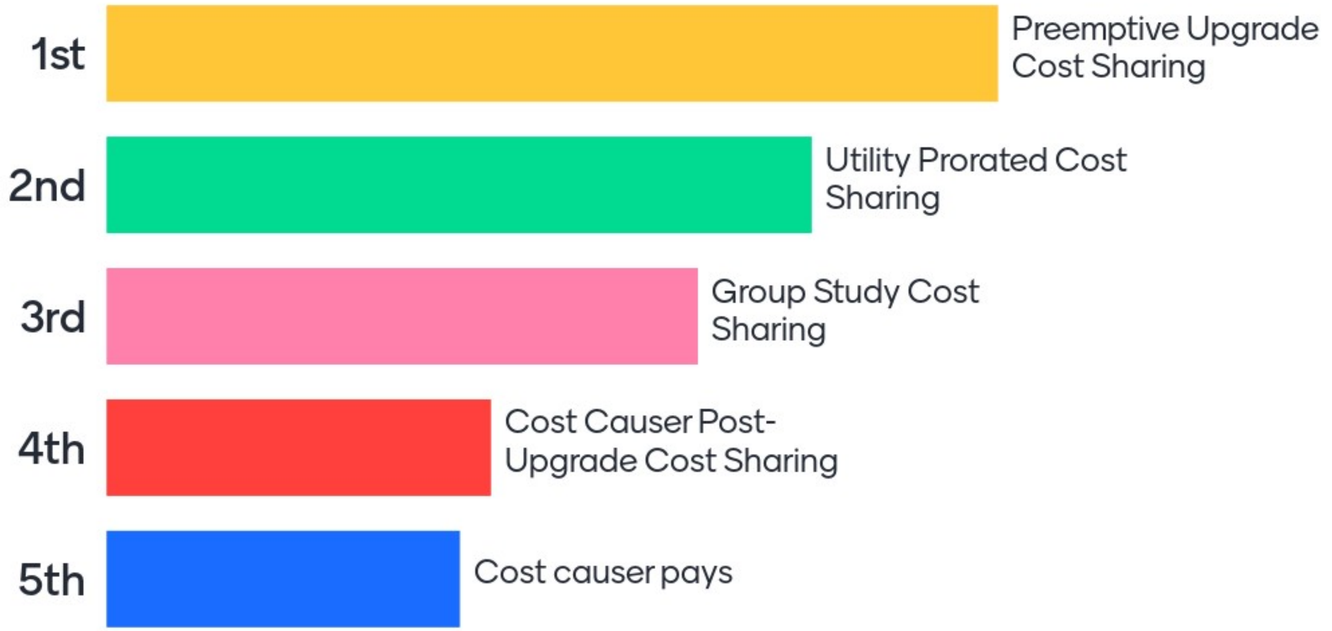
establishing hosting capacity reserves for customer sited resources and utilization of smart inverter functions

Distribution visibility and improved data to allow real time operations

Grid Modernization proceedings

Conditions of the cost allocation upgrade are also important for developers. If 50% of the payment is needed to start big mitigation work like the transformer upgrade, it will create time uncertainty.

What should be the primary cost allocation approach used five years from now?



How should/could curtailment logic influence cost allocation considerations?

10 Answers

pro rata

Like Hawaii, volt-watt consumer protection

The likelier you are to be curtailed, the less your cost allocation should be

Pro rata per kW based on actual or average export

How can a cost allocation policy be designed so that there is still cost contribution for upgrades, even if a project can be interconnected with some level of curtailment prior to upgrade completion?

queue position and prorata export

I support the flexible methodology. Connect and curtail first while upgrades are completed.

DFAX and MW impact

Utility scale projects are reimbursed so residential scale projects should as well

How should/could curtailment logic influence cost allocation considerations?

10 Answers

Pro: in line with "but for" cost allocation principle

What is a fair way to determine cost sharing per entity?

11 Answers

DFAX and MW contribution

MW interconnected

use of upgrade

pro rata share

For the upgrades that should be borne by IX entities (in Multi-Beneficiary Cost Sharing) the per kW approach

Based on the shared stakeholder benefits of the upgrade.

per MW with perhaps low-income exemption for some on-site projects

per kW, but accounting for resource characteristics (wind, solar, storage, ...)

Smaller customer resources and non/limited export DER should be exempt and utilizing hosting capacity reserves so that feeders are not closed. cost share based on export capacity

What is a fair way to determine cost sharing per entity?

11 Answers

Pro rata with adders and subtractors such as low income and designs that forward state's clean energy policies

CON: cost causer is a reactive way to fund upgrades

What are the pros and cons of the traditional COST CAUSER approach?

12 Answers

CON: It is the #1 impediment to decarbonizing our electric generating sector

CON: It fails to recognize that IX these facilities is in everyone's interest and thus everyone should contribute to the costs...even beyond electricity rates

Con: residential customers are paying for utility asset upgrades both through the ix process and through rates

pros: straight forward allocationcon: first mover dilemma

cost causer for consistent with load and DG customers

Regulatory uncertainty and significant timeline delays for everyone in the queue

Not at all feasible for small DERs even service upgrade costs are too much for many customers to move forward

CON: Overload of interconnection queue to avoid triggering the upgrades.

pro: in line with "but for" cost allocation principle

What are the pros and cons of the traditional COST CAUSER approach?

12 Answers

CON: this is a reactive way to fund upgrades vs proactive forecasting and planning to share costs with all beneficiaries

CON: Inefficient development/downsizing/prospecting for areas of the grid with available system capacity rather than the best place to site a project

Pro: If a Hosting capacity map is available, the number of projects should be more important in areas where there is no upgrade. So faster way to interconnect projects without paying for upgrades

What are the pros and cons of GROUP STUDY COST SHARING?

11 Answers

CON: Group Studies are not generally working. The timelines are too long and the costs are still too high in many instances

CON: There is still no transparency into the utilities' determination of what upgrades are truly necessary (as there would be if the upgrades were included in a rate case)

Con: lots of issues to workout, e.g. free riders and potential penalties for late dropouts

Pro: can overcome cost barriers that individual projects couldn't overcome, and still having costs attributed to those that benefit

CON: If a project drops out, timelines can actually be extended given need for restudy

Con- 1 project can cause all project to become unfeasible

CON: Complex to manage and could slow down the interconnection of all in the cluster

Pro - It can allow projects to over come financial hurdles

CON: It stops projects that could sail through from interconnecting faster

What are the pros and cons of GROUP STUDY COST SHARING?

11 Answers

pro: lower risk

Could this one, cost causer post-upgrade and more information from developers on what they can afford to pencil out, make for a compromise?

What are the pros and cons of COST CAUSER POST-UPGRADE COST SHARING?

6 Answers

Con: requires strong financial resources and longer timelines

Why is okay for the utility to pay for upgrades proactively in the hope that generation will site there, but it is not okay for a developer to do it?

CON: complicated to track for subsequent projects

Pro- It is already done for load

Pro: in the likely areas where DERs will site, could facilitate faster interconnection with lower risk of losing out

Con: that creates a new tracking challenge for utility billing

What are the pros and cons of PREEMPTIVE UPGRADE COST SHARING?

17 Answers

PRO: Better than retroactive, as it provides cost certainty and if the costs pencil for projects could facilitate more DER development

Pro: utilities have greater information and insight to accurately forecast DER growth. Have greater capital reserves and longer financial timelines

Pro - allows the Utility to help steer DER to the best locations

PRO: Recognizes that there is going to be need for distribution system upgrades due to beneficial electrification

Con - no DER goes to that area to develop and the upgrades are not used

PRO: proactive system planning is more capital efficient and accelerates decarbonization. Utilities can inceptive developers to build in areas that defer traditional upgrades (e.g. well sited storage)

Cons - potential stranded investment

CON: Still fails to recognize wider societal benefits, as it done with Multi-Beneficiary Cost Sharing along the lines of DPU 20-75

Required: sophisticated forecasting and/or collaboration with communities/developers. This can be done in integrated distribution plans

What are the pros and cons of PREEMPTIVE UPGRADE COST SHARING?

17 Answers

CON: Falls short of what we really need: Grid Modernization

Pro/Con - requires a new discussion about kWh rate paid. If the utility takes the risk should they get more of the reward

PRO: uses commercial interest to influence the planning process.

PRO: Utilities can build in less developed areas to vs. upgrades going to wealthy regions that correlate with customer DERs

Utilities make a guaranteed rate of return, whereas developers risk their capital

PRO- for roof top could allow the utility to perform upgrades to target asset renewal and or EV adoption

Utilities only have the capital that comes from their shareholders, developers are flush with private equity capital, yet their sole business is to make money, therefore want to push the risk to load.

New point of view: Gather all preemptive upgrade costs within the utility area. Every developer pays a cost/MW (1 rate for "safe area",1 for "constrained areas". Utilities pay for upgrades when needed

What are the pros and cons of UTILITY PRORATED COST SHARING?

10 Answers

Con: less efficient than preemptive

could this one, cost causer-post upgrade and more information from developers on what they can afford for a project to pencil out could make a compromise?

how could one determine legitimacy to "how much developers could afford" if they are not a regulated entity?

pro: its more in line with current distribution system planning practices.

Could the commercial interest in a location be signaled to the utility to be used proactively in the planning process. Vs waiting for the IA

PRO: Avoid building upgrades that won't be fully used. the ratio of pro rata should be clear (50%, 70% ..?)

pro, based on customer needs and not forecasts.

Con: long lead times on infrastructure construction would lead to always being behind as opposed to preemptive

Con - many upgrades driven by Community size solar is driven by the need to reduce the impedance between the DER and the load it is serving and not capacity. The capacity created likely never used

What are the pros and cons of UTILITY PRORATED COST SHARING?

10 Answers

The cost allocation could be visible/shared in Hosting capacity maps in advance to see is developers are interested.

Are there other cost allocation approaches to consider?

7 Answers

Taxes

Location/load based cost allocation. DER installed on a feeder up to % of loading paid for by utility. after paid for by causer

Create cost allocation contribution areas for new projects: No CA, /MW, $$/MW. Every developer in the area pays the same CA. Utility determines the cost and the limit of MW depending constraint.

Con Edison and HECO have proposed programs that would cover grid upgrade costs for projects located in / serving LMI customers, which is a related cost allocation issue to consider

One utility has proposed a potential "subscription" type fee for those interconnected that goes into a fund. So annual fees and creating less free riders

Residential customers should not pay for upgrades. They are not asked to pay for upgrades when adding an EV charger, so why should they pay when they add solar.

Residential customers may have to pay for upgrades for EV chargers.

Open Comment