UTILITY CONSUMERS' ACTION NETWORK
San Diego's Utility Watchdog
404 Euclid Ave, Suite 377, San Diego, CA 92114
(619) 696-6966 • www.UCAN.org

February 22, 2024

Gridworks
PO Box 5013
Berkeley, CA 94705
ATTN: Maggie Dunham Jordahl

RE: Informal comments on Future Grid Workshop #1 (R. 21-06-017)

Dear Ms. Jordahl:

On behalf of the Utility Consumers' Action Network (UCAN), I am submitting these informal comments on the first Future Grid Workshop held on February 8, 2024, under Track 2 of the Order Instituting Rulemaking to Modernize the Electric Grid for a High Distributed Energy Resources Future proceeding (R.21-06-017), including the slides and transcript of UCAN's presentation.[1]

UCAN is a 501(c)(3) non-profit public benefit corporation with a forty-year history of intervening in California Public Utilities Commission (CPUC) proceedings to protect and represent the interests of residential and small business customers in the San Diego Gas & Electric service territory.

UCAN congratulates Gridworks, for convening a stimulating and productive workshop, and appreciated the opportunity to present our recommendations alongside the twelve other participants[2] in response to the first question posed in the Scoping Ruling for Track 2:

> *"What are the operational needs necessary to efficiently operate a high DER grid, unlock economic opportunities for DERs to provide grid services, limit market power, reduce ratepayer costs, increase equity, support grid resiliency, and meet State policy objectives?"*

UCAN would like to highlight the following insights and recommendations of other presenters:

- AEMO emphasized how it was "*crucial to have much expanded datasets*" tracking the granular geographic location of DER capacity to ensure system reliability, [3] and observed that customer meters are an untapped resource that are "*highly capable of delivering a lot of functio*ns" that grid operators need, but which have "*never been used in that way before, and there's a lot of governance challenges around unlocking those capabilities*."[4]

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[1] The workshop materials and recording are online at: https://gridworks.org/initiatives/california-future-grid-study and https://www.youtube.com/watch?v=HHZv58Ty9FQ

[2] The other presentations were given by representatives of CPUC Energy Division (ED), Pacific Gas & Electric (PG&E), San Diego Gas & Electric (SDG&E), Southern California Edison (SCE), California Independent System Operator (CAISO), Australian Energy Market Operator (AEMO), Holy Cross Energy, Energy Systems Integration Group (ESIG), Public Advocates Office (PAO), 350 Bay Area, The Climate Center, and the Joint Community Choice Aggregators (Joint CCAs: San Deigo Community Power, Sonoma Clean Power, Silicon Valley Clean Energy, Peninsula Clean Energy, San Jose Clean Energy, and Ava Community Energy).

[3] *See* Future Grid Workshop #1, recording starting at 2:15:20. Available online: https://www.youtube.com/watch?v=HHZv58Ty9FQ

[4] *Ibid.,* recording starting at 2:08:00

- ESIG explained how a lack of visibility into DERs risked increasing reserve requirements and cost for ratepayers, and highlighted how Green Mountain Power's home storage program times the discharge of batteries at peak times to lower capacity requirements and avoid transmission allocation charges. [5]
- The Joint CCAs explained how current DER programs are optimizing based on wholesale requirements, while echoing PG&E's concern that local and system needs can be divergent or even negatively correlated, and discussed the need to enable economic signals and utility operations data so that CCAs could "*optimize the dispatch of DER around distribution needs*" to "*help reduce operational challenges, voltage spikes or sags and congestion, and then ultimately defer upgrades and reduce distribution system costs*."[6]
- CAISO identified the need to track "*DER technology type, location, size, operational behavior, and performance*" at various granularities,[7] along with a "*growing need for communications*" between "*grid operators as well as aggregators and scheduling coordinators*" and recommended establishing a "*communications platform, information sharing framework*" to monitor the status of DERs and ensure operational coordination on a day-ahead and real-time market basis through delivery of services.[8]
- PAO identified the need to "*track DER performance and interconnection characteristics, DER state-of-charge, cost of operation, historical performance, aggregator data, real-time prices*."[9]
- The Joint Utilities identified the need for new systems to enable "*real-time awareness of DER status and output*", highly granular short-term forecasts of DER output, advanced coordination and communication with CAISO regarding DER schedules, operations, and constraints, and day-ahead and real-time scheduling and dispatch of DERs.[10]
- ESIG discussed how pure "*prices to devices*" approaches, beyond moderate levels of DER penetration, would create price oscillation and reliability issues, and observed that linking price thresholds to quantities to orchestrate DER dispatch (which is a market settlement function) would solve this issue.[11]
- The Climate Center explained how achieving the Commission's objectives required the creation of "*an open-access distribution network along and a transactive distribution-level market*" to coordinate DER dispatch locally "*very much like what the CAISO does on the transmission grid*."[12]

The operational functionality called for to varying degrees by these parties — expanded data access and standardized communications across market entities, enhanced tracking and monitoring of DER assets, and a distribution-level market to orchestrate day-ahead and real-time DER dispatch and coordinate with CAISO — is the precise functionality that UCAN's presentation focused on the need to deploy on a statewide basis:

1. Statewide Data Hub: where stakeholders establish a comprehensive model and format for all required data, along with a single API (Application Programming Interface) that allows any entity to request and receive the data that they are authorized to use — and which later evolves over time, based on stakeholder input, to enable innovations and meet the needs of the DER marketplace — with data flowing to and from utilities through a neutral platform operator in charge of managing third party registrations and permissions.

[5] *Ibid.,* recording starting at 2:41:20.
[6] *Ibid.,* recording starting at 3:47:20.
[7] *Ibid.,* recording starting at 1:53:10.
[8] *Ibid.,* recording starting at 1:57:40.
[9] PAO, High DER Future Grid Study Workshop #1 Operations Needed, slide #5. Online: https://gridworks.org/wp-content/uploads/2024/02/cal_advocates_slides_20240205-FINAL.pdf
[10] *See* Future Grid Workshop #1, recording starting at 1:46:45. Available online: https://www.youtube.com/watch?v=HHZv58Ty9FQ
[11] *Ibid.,* recording starting at 2:47:10.
[12] *Ibid.,* recording starting at 3:31:35.

2. Statewide DER Register: a comprehensive database that tracks the location and characteristics of retail behind-the-meter, distribution-interconnected, and microgrid DERs.

3. Statewide DER Market: a platform to manage the scheduling and trading of demand flexibility and DER services across the distribution grid, which would allow utilities and load serving entities to contract for flexibility services over different time periods, integrate with the DER Register, keep utilities and LSEs updated regarding DER availability up through the moment the DER is dispatched, handle settlements after the trading day, and ensure coordination with CAISO markets and transmission operations.

UCAN's presentation highlighted real-world developments of each type of platform: a proposed regional Data Hub for New England, the Australian DER Register database, and the Piclo Flex market platform deployed across the EU and in National Grid's territory in New York.

The real-world deployments of these specific platforms — and all other examples UCAN has identified to date — have been designed to scale and function across multiple utility territories. Doing so is crucial from a market development perspective:

- Standardizing data formats, communication protocols, DER services / contracts, and market operations over multiple utility territories maximizes scale benefits and lowers barriers for new entities to enter the market, transact, compete, and create new value for customers.

- Further, these platforms represent the new 'essential facilities' needed to make the market function in practice. Consequently, tasking neutral, specialized third parties to operate and maintain these systems significantly mitigates market power concerns vis-à-vis the Investor-Owned Utilities — which would otherwise arise if the functionality were developed and controlled by each individual utility — and supports a change management process that is responsive to the needs of the market.

As stated at the outset of our presentation, UCAN believes that achieving the Commission's seven objectives requires displacing future <u>utility</u> investments in the transmission and distribution networks with <u>third-party</u> investments in DERs, orchestrated intelligently to maximize use of the existing grid.

Towards that end — in addition to the statewide market-enabling platforms discussed above — UCAN has advanced six market reforms to remove barriers that are preventing third parties (CPAs, ESPs, and DER aggregators) from maximizing the use of DERs to support efficient distribution grid operations: transitioning to 5- and 15- minute smart meter and wholesale market settlement intervals, implementation of LMS-compliant dynamic rates, expansion of submetering, shifting of transmission cost allocation to load serving entities for collection from retail customers, implementation of supplier consolidated billing, and monetization of distribution-interconnected DERs as wholesale load reducers (including for transmission cost allocation) for load serving entities.

These represent significant reforms to market operations that have the potential to substantially lower risk and costs for ratepayers, and enhance equity, by further limiting market power and maximizing economic opportunities for DERs to support grid resiliency in the furtherance of State policy objectives.

UCAN looks forward to further advancing these solutions in the upcoming Future Grid workshops, and again offers our appreciation of Gridwork's expert facilitation of these critical market design topics.

Respectfully submitted,
/s/ Jane Krikorian

Jane Krikorian
Regulatory Program Manager
jane@ucan.org

<u>Attachment:</u> UCAN presentation and transcript, 2/8/24 Future Grid Workshop #1 (R. 21-06-017)

ATTACHMENT 1

R. 21-06-017, UCAN presentation and transcript from the 2/8/24 Future Grid Workshop #1

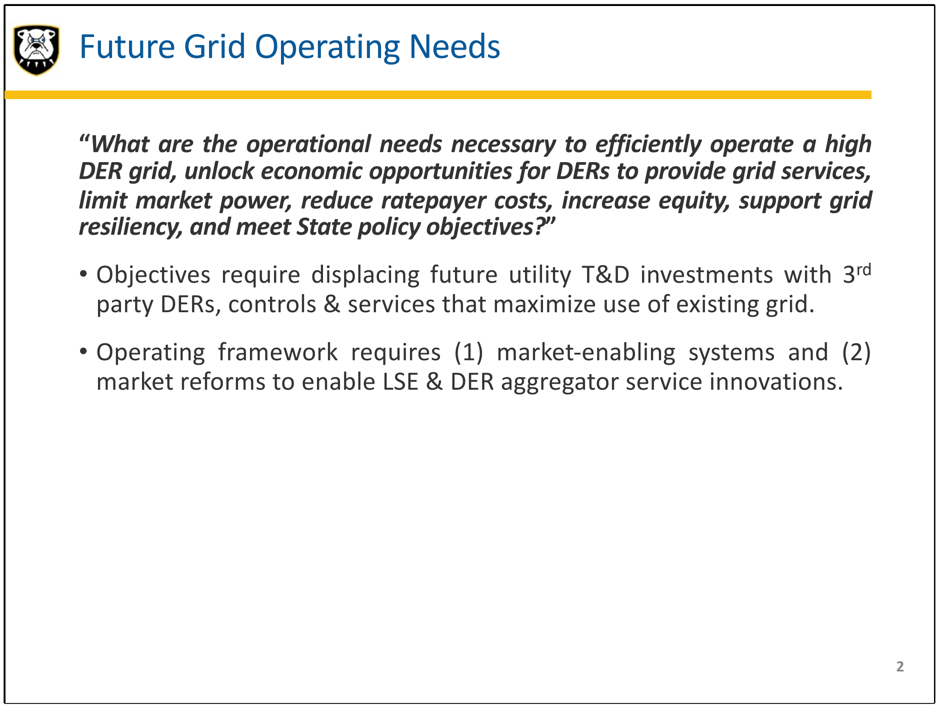
UCAN
UTILITY CONSUMERS' ACTION NETWORK
San Diego's Utility Watchdog

R. 21-06-017, Track 2: Future Grid Workshop #1

Operational Needs for California's High DER Future

February 8, 2024

I'm Samuel Golding, president of Community Choice Partners, consultant on behalf of the Utility Consumers' Action Network (UCAN). And I apologize in advance for presenting 20 slides in 8 minutes.



Our recommendations today are based on the insight that best achieving the Commission's seven objectives here is really going to come down to how quickly we can scale-up relying on non-utility, third-party investments in DERs, along with controls and services to orchestrate those DERs in ways that maximize use of the existing grid, in order to displace and lower new utility capital investments into the transmission and distribution networks.

And credit where credit is due: that's less our unique insight, and more the consensus view that we see emerging across a lot of organized electricity markets grappling with these questions.

The new operating framework this requires has several features that we're categorizing as either (1) market enabling systems, the new "operating system" so to speak, that tracks, orchestrates, and compensates DERs, and (2) key market reforms: the new rules and business processes that enable Load Serving Entities and DER aggregators to provide innovative services to customers.

Summary of Recommendations

1. Statewide platforms to enable functional operations
2. Market reforms to promote efficient operations

Summary of Recommendations

Statewide Platforms

- Data Hub: "API of APIs" ensures data access for all parties
- DER Register: database tracks location / capabilities of DER
- DER Market: facilitate trading & scheduling DERs, microgrid & CAISO coordination.

Market Reforms

- Shift to 5-/15- minute smart meter and CAISO load scheduling
- Implement LMS dynamic rates
- Expand DER submetering
- Allocate transmission costs to LSEs
- Enable Supplier Consolidated Billing
- Count Community-Scale DER as wholesale load reducers

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I'll hold off on explaining the 6 market reforms on the right, for time constraints. On the left, we're recommending that the new platforms to orchestrate DER services should be deployed on a statewide basis to function optimally, covering IOU territories and also including municipals that elect to participate.

Each platform represents a function that is going to be necessary to create a rational operating framework and well-regulated DER marketplace: the Data Hub standardizes data sharing & communications, the DER Register database tracks what assets are deployed across the state, and the DER Market platform actually facilitates the scheduling and trading of DER services and coordinating with CAISO.

We're presenting these as discrete platforms, in part because our slides highlight real-world examples, they actually need to be tightly integrated, and could conceivably be deployed in California as part of a single statewide platform.

Statewide Platforms

Essential facilities to ensure functional operations

Statewide Platform: Data Hub

- Utilities control systems essential for DER service-based innovation.
- Substantial cost, friction, and lack of interoperability associated w/ accessing multiple data types siloed within each utility:
  - Advanced Metering Infrastructure (AMI) Network
  - Meter Data Management System (MDMS)
  - Advanced Distribution Management System (ADMS)
  - Distributed Energy Resource Management System (DERMS)
  - Customer Information System (CIS) & billing
- Similar challenges re: accessing useful data from aggregators / DERs.
- **Market requires standardized and extensible approach to ensure efficient data access and interchange across entities (utilities, LSEs, DER providers).**

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As context for the Data Hub, the current state of data exchange between utilities and third parties is very inefficient. It's very fragmented. And when you consider how enabling innovative third-party services will require expanding access across multiple utility systems, and also how data from third parties will need to start flowing back to inform market operations and utilities, it becomes apparent that we simply need a better approach to enabling data exchange that is standardized, efficient, and extensible.

Statewide Platform: Data Hub

- Implements "API of APIs" across multiple utilities to standardize authorization, protocols, and data formats for 3rd party access.
- Data Hub structure:
  - Logical Data Model defines common model and format for required data
  - Individual utilities pull and normalize data from AMI network (headend), MDMS, ADMS, DERMS, and CIS systems upon request
  - Utility data flows through central web portal / standardized API to 3rd parties
  - LSEs / DER providers can provide data from DERs through Data Hub too
- Neutral third-party vendor runs central portal / API and manages 3rd party registrations and permissions.
- Updates overseen by representative council of industry stakeholders.

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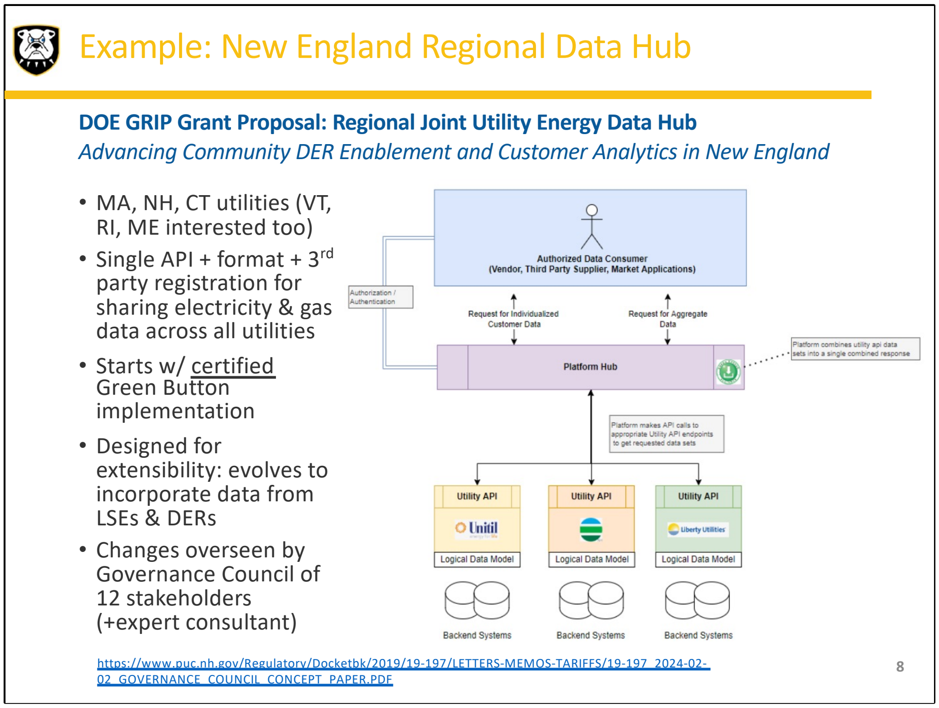
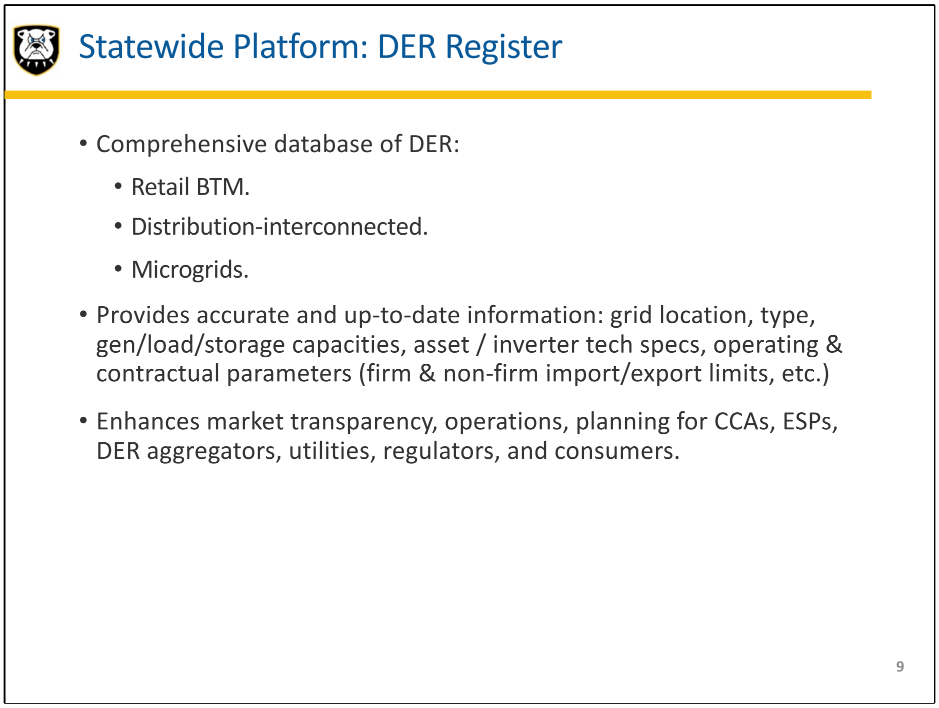
That has given rise to this Data Hub concept, where stakeholders establish a comprehensive model and format for all the required data, along with a single API (Application Programming Interface) that allows any entity to request and receive the data they're authorized to use. The data flows to and from utilities through a neutral platform operator, managing third party registrations and permissions, instead of relying on each utility to do so for their respective territories. And then the scope of data and the API evolves over time, with stakeholder input, to enable innovations and meet the needs of the DER marketplace.



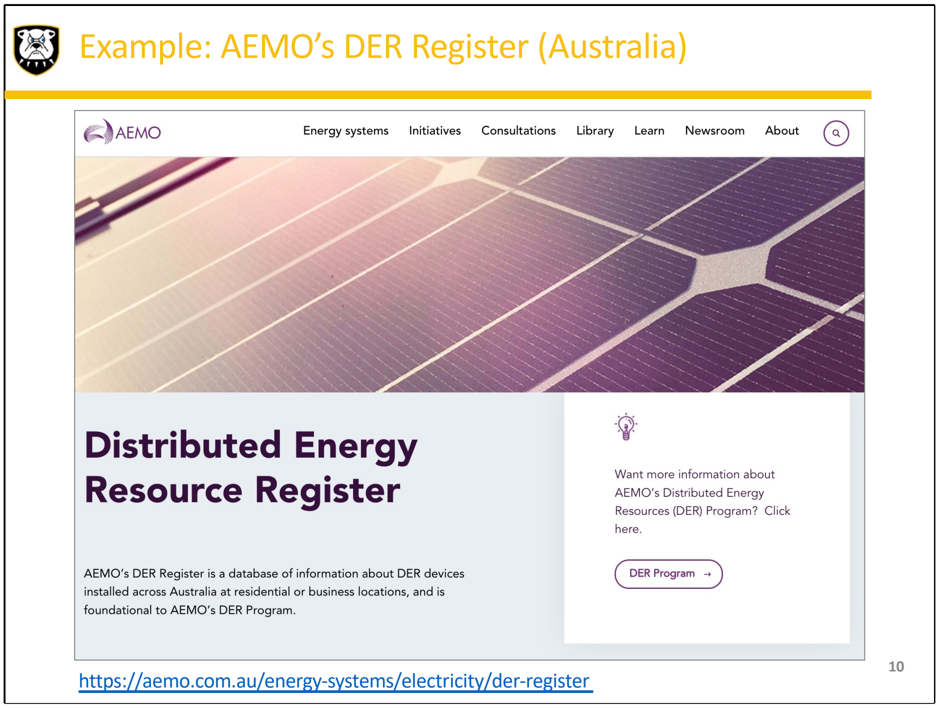
New Hampshire has been developing a Data Hub implementation plan for a couple of years. It has recently become a proposal to DOE for a regional deployment across New England. I'll disseminate an updated slide deck with links to the concept paper.

Concept Paper:
https://www.puc.nh.gov/Regulatory/Docketbk/2019/19-197/LETTERS-MEMOS-TARIFFS/19-197_2024-02-02_GOVERNANCE_COUNCIL_CONCEPT_PAPER.PDF

Stakeholder Slide Deck:
https://www.puc.nh.gov/Regulatory/Docketbk/2019/19-197/LETTERS-MEMOS-TARIFFS/19-197_2024-02-02_GOVERNANCE_COUNCIL_POWERPOINT.PPTX



The second statewide platform, or function — the DER Register — is a database tracking the grid location and capabilities of the DER assets and keeps that updated. That's going to be increasingly critical in California, both for market operations and to enable accurate forecasting and planning.



The most well-known example went live in March 2020 in Australia, which tracks behind-the-meter DERs, and all database documentation and technical specifications are posted online.

Direct link: https://aemo.com.au/energy-systems/electricity/der-register

Statewide Platform: DER Market

- Statewide, distribution-level market platform.
- Facilitates scheduling and trading demand flex & DER services:
  - Integrates with DER Register to minimize transaction costs.
  - Utilities / LSEs advertise short <> long-term flex needs, initiate competitions, and accept / reject offers.
  - Operates in real-time or near-real-time.
  - Updates utilities / LSEs re: asset availability until time of dispatch.
- Standardizes contracts, market rules, asset monitoring, dispatch, settlement / invoicing, and compliance monitoring.
- Evolves to coordinate DER / demand flex with CAISO markets at T-D interfaces → islanding of microgrids and regional zones.

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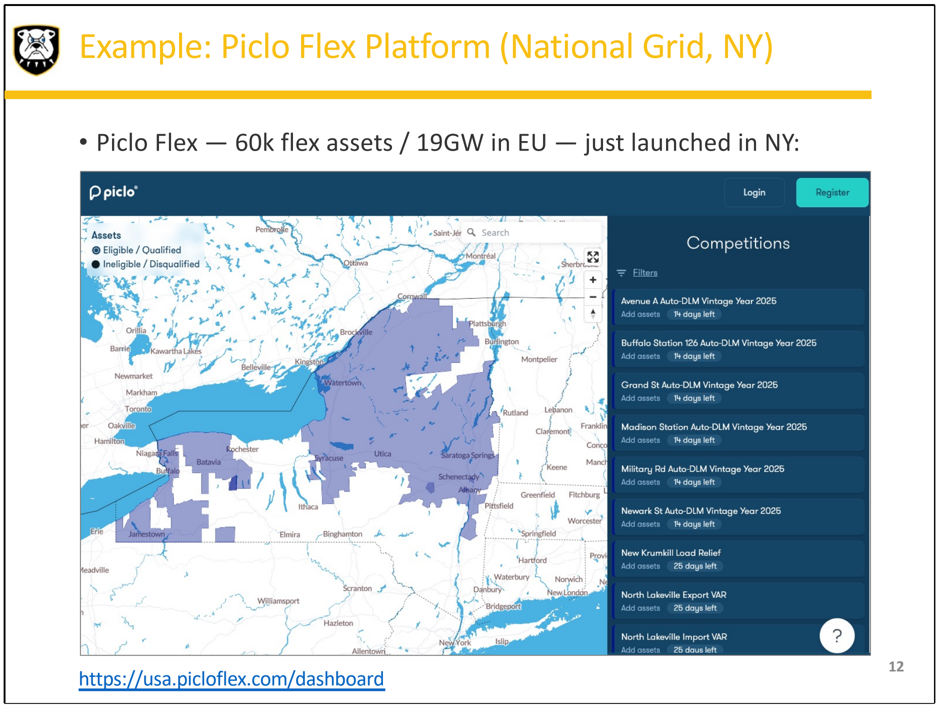
Third and finally, the DER Market platform actually schedules and trades demand flexibility and DER services across the distribution grid.

It would allow utilities and Load Serving Entities to contract for flexibility services over different time periods, integrates with the DER Register, keeps utilities and LSEs updated regarding DER availability up through the moment that the DER is dispatched, and then it handle settlements after the trading day.

Over time, it would be expected to naturally evolve to coordinate with CAISO markets and transmission operations.



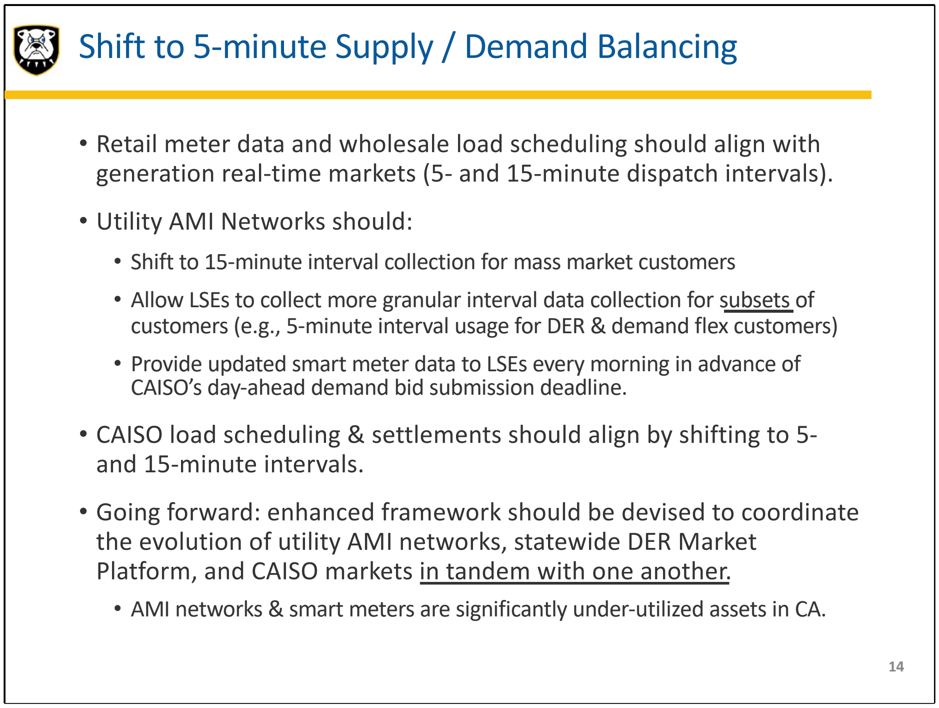
There's a number of these platforms that have been commercially deployed and are scaling across the EU and Australia.

Piclo Flex is an industry leading platform, with over 60,000 DER assets and 19 gigawatts (GW) of flexible capacity in the EU along. They're now beginning to deepen coordination with wholesale and transmission networks.

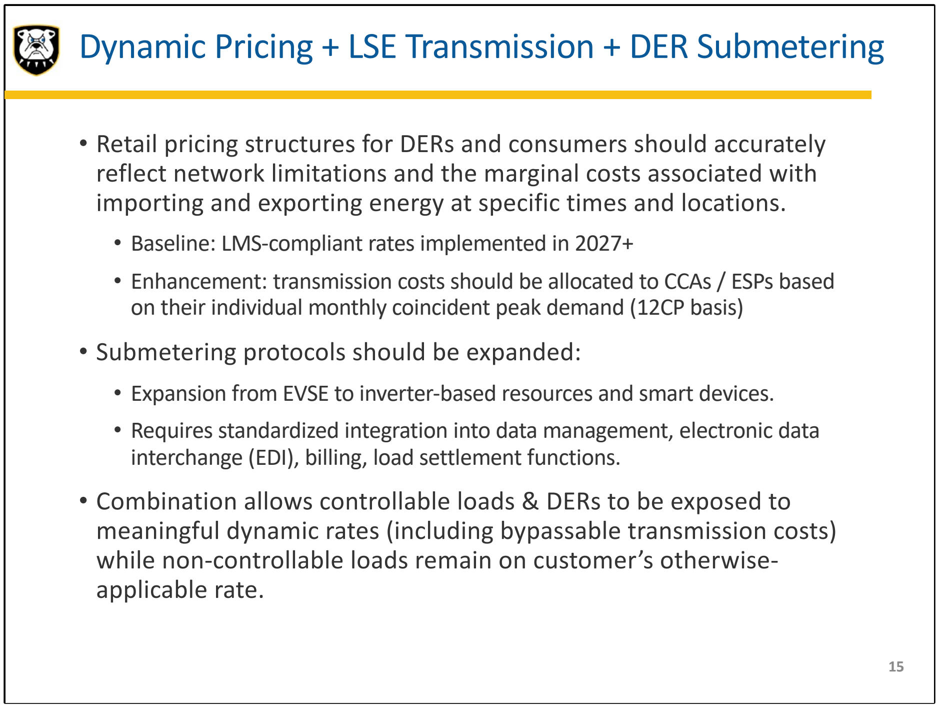
This screenshot shows the flexible capacity solicitations that are live right now in New York, where National Grid has deployed the platform.

Direct link: https://usa.picloflex.com/dashboard

That brings us to the reforms we're recommending be implemented so that third-parties can innovate in ways that enhance operational efficiency.

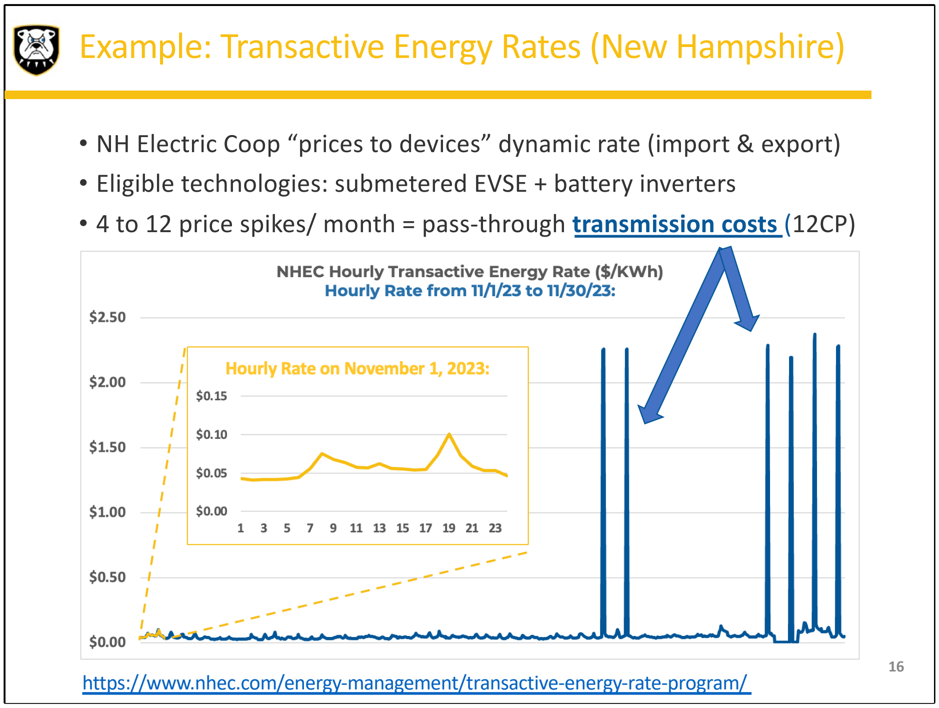


To enable more granular balancing of supply and demand on a market-wide basis, smart meters and CAISO demand bidding and load settlements should shift to 15-minute intervals instead of hourly intervals. A further enhancement would be to permit 5-minute intervals, for subsets of DER and demand flex customers. Two points of comparison are that 15-minute intervals are used in Texas (ERCOT), and 5-minute intervals are now allowed in New England (ISO-NE).



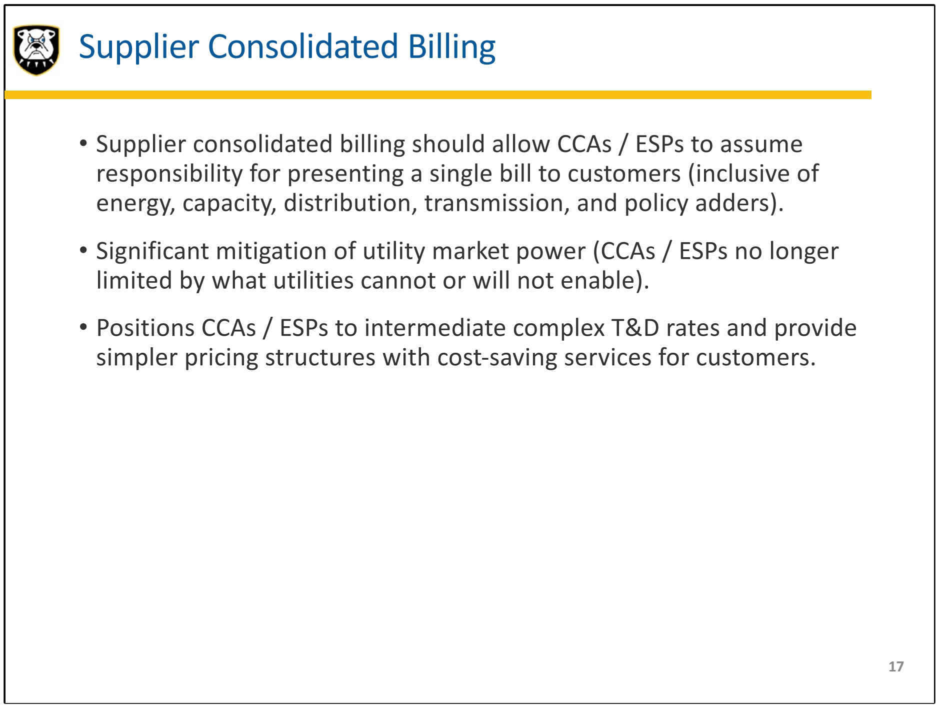
In addition to the implementation of LMS compliant rates beginning in 2027, we're recommending that transmission costs be allocated to Load Serving Entities for collection from retail customers. California utilities already allocate transmission costs to customer classes on a monthly coincident peak demand basis, and the costs could be allocated to LSEs on that same basis. This is already being done in at least one FERC regulated market, in Pennsylvania (PJM territory), and doing so would provide CCAs and ESPs with a very significant additional price signal and incentive to flex demand and DERs in ways that lower forecasted peak loads.

Submetering protocols should also be expanded, from EV supply equipment to also include inverter-based resources and smart devices. That would allow more controllable loads and DERs to be exposed to dynamic rates, while non-controllable loads remain on the customer's otherwise-applicable rate. We view this as a key consumer protection — it would really help avoid exposing customers to "whole-home" bill shocks from high price events.



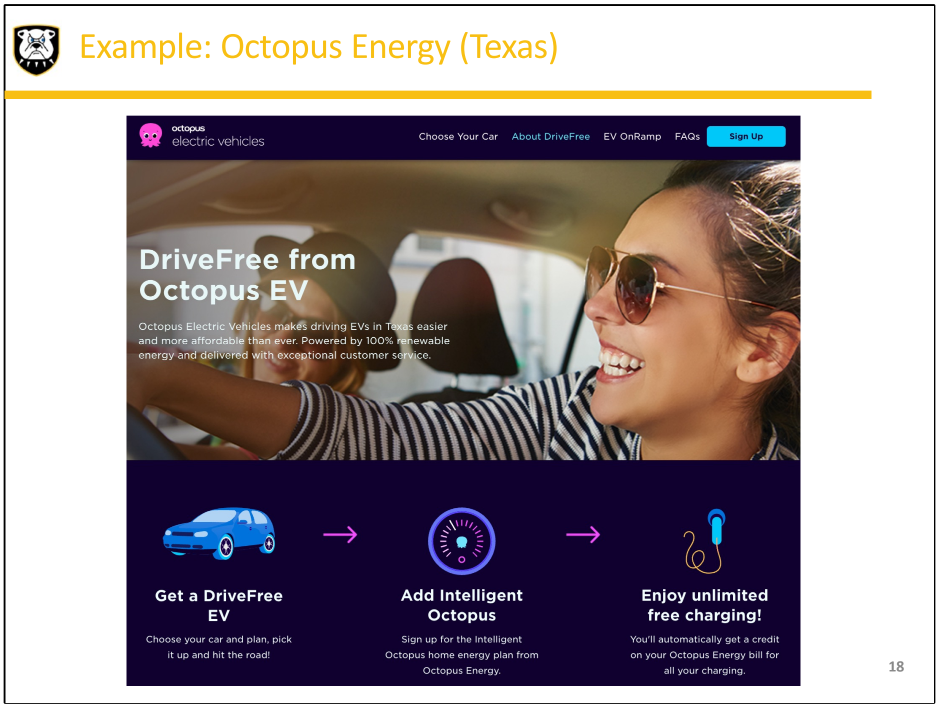
These reforms would allow CCAs to deploy programs like New Hampshire Electric Coop's Transactive Energy rates program, where the Coop forecasts the likely transmission peaks in multiple hours each month, passes through a price signal to submetered EVs, batteries, and water heaters, and customers are saving a lot of money each month by responding to those price signals, bypassing those transmission costs by shifting load off-peak or selling power back on-peak to lower overall network demand.

Direct link: https://www.nhec.com/energy-management/transactive-energy-rate-program/



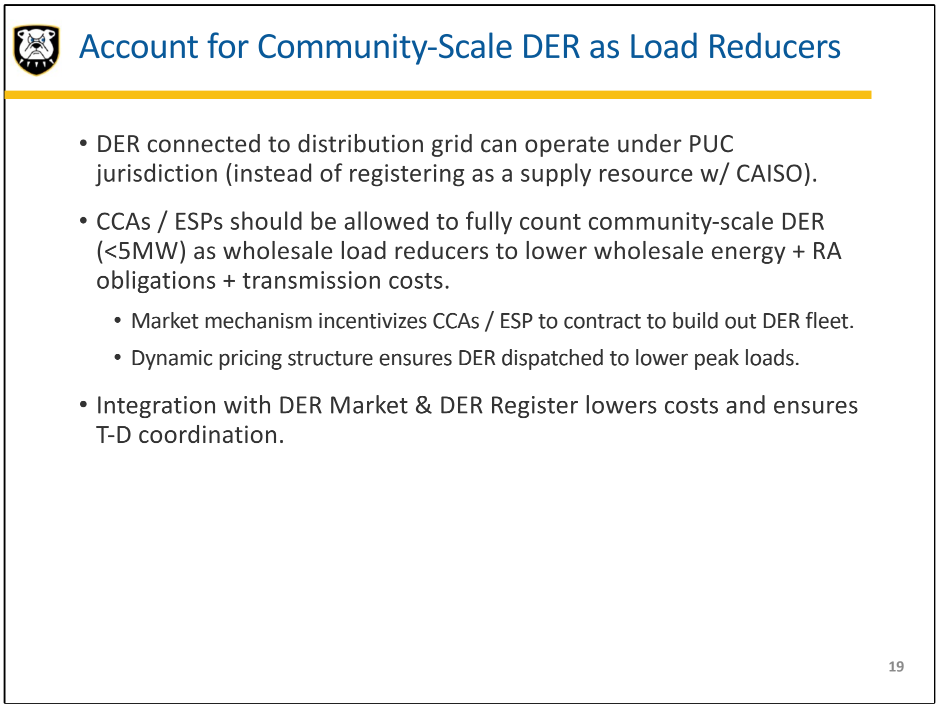
Authorizing supplier consolidated billing would allow CCAs and ESPs to assume responsibility for presenting a single bill to customers, including the utility's charges, instead of relying on utilities to perform this function. That would allow CCAs and ESPs to offer innovative services and products to customers without being limited by what utility billing systems can or can't support.

If you consider this in conjunction with our other recommended reforms — shifting to 15- and 5-minute settlements, shifting transmission costs to LSEs for collection, expanding submetering, and creating a DER Market platform where LSE can monetize demand flexibility — this would position CCAs and ESPs to create a lot of new value for DER customers, and in ways that make it easy for customers to participate and benefit.



As one example of what that could look like, this is Octopus Energy, a retailer (ESP) in Texas. They've just rolled out a program where customers can lease an EV, authorize Octopus to handle the managed charging services behind-the-scenes managed charging services to lower costs, and the customer experience is quite simplified: they receive unlimited free charging for signing up for this service.

Direct link: https://octopusev.us/drive-free-story



Our last recommendation is for community-scale, distribution-interconnected DERs (5 MW and under) to be allowed to be counted as load reducers for CCAs and ESPs, including for lowering peak demand for transmission cost charges. These assets would operate under the CPUC's jurisdiction, on the DER Market platform, instead of registering as a supply resource bidding into the CAISO market.

This would create a market in which CCAs and ESPs would be financially incentivized to contract for potentially significant amounts of new distribution-interconnected DERs, which would then be intelligently dispatched at the right times to maximize cost savings for customers and the grid as a whole.

Questions?

Jane Krikorian
jane@ucan.org

UTILITY CONSUMERS' ACTION NETWORK
San Diego's Utility Watchdog

Samuel Golding
golding@communitychoicepartners.com

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Appendix: Summary of Recommendations

Statewide* Platforms to Enable Functional Operations:

1. **Data Hub:** "API of APIs" ensures data interchange between all entities.
2. **DER Register:** database tracks location & capabilities of DERs.
3. **DER Market:** facilitates scheduling & trading DERs → islanding → T-D coordination w/ CAISO markets and operations.

* Deployed across IOU territories but open to municipals to join (lowers costs / standardizes market)

Market Reforms to Promote Efficient Operations:

1. **Shift smart meters & wholesale settlements to 5- / 15-minute intervals:** strengthens price-based supply/ demand balancing capacity of market.
2. **Implement LMS dynamic rates:** ensures de minimis price optimization opportunity for DER aggregators serving utility supply customers.
3. **Expand DER submetering:** enhances consumer protection by allowing only controllable loads & DERs to be exposed to dynamic pricing (avoids forcing whole house / business onto dynamic rate).
4. **Allocate transmission costs to LSEs on a 12CP basis:** boosts price signal + incentivizes CCAs / ESPs to promote year-round DER and demand flex.
5. **Implement Supplier Consolidated Billing:** frees CCAs/ESPs to provide innovative DER services & products (mitigates utility market power).
6. **Count Community-Scale DER as load reducers:** incentivizes LSEs to build out distribution-connected DER & dispatch to minimize peak loads.

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Here's the cliff notes summary — thank you so much.