Identifying Operational Needs
— Comments for Panel 3 —

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The Question for Today's Workshop *

"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?"*

*** All items are addressed individually on slides 7-13**

The Core Structural Element Needed *

The core structural element needed to achieve all seven goals and maximize the societal, system & customer benefits of DERs is:

- **an open-access distribution network & transactive distribution-level markets**
- ***that enables all DERs, on both sides of the end-use customer meter, to economically transact energy & grid services.***

The <u>operational needs</u> of the distribution system operator (DSO) <u>derive from this core functional role</u> — to operate a transactive network & markets reliably, efficiently, in accordance with open-access principles, & in coordination with CAISO.

*** Benefits and rationale are explained on slides 7-13**

Operational Needs *

The open-access transactive network requires the DSO to

- **Define grid services DERs can economically provide**
  - **E.g., compensate DERs & Aggregators for flattening circuit-level peaks (load & supply "ducklings") to increase hosting capacity without upgrading circuits**
- **Conduct non-discriminatory procedures for procuring, dispatching & compensating DERs**
  - **Market mechanisms that receive & clear bids (day-ahead & day-of) linked to current distribution system conditions & transmit results to participants**
  - **Establish real-time communication with participating DERs**
  - **Conduct solicitations for longer-term grid services contracts**
  - **Accurately measure DER grid service performance & perform settlement**
- **Integrate DER grid services into distribution network planning**

*** Operational needs are identified by analogy to CAISO's core functional role as operator of the bulk system & wholesale market; to be refined in designing the transactive network & markets**

Operational Needs * – continued

The open-access transactive network requires the DSO to

- **Provide up-to-date network information to local governments, tribes, LSEs, DER developers & CBOs seeking to plan & deploy DERs**
- **Coordinate with CAISO operations & markets (day-ahead & real-time) at T-D interfaces to manage bulk system impacts of DER activities**
  - **Clear DSO markets in time to provide accurate forecast to CAISO DA & RT markets on expected net flows across T-D interfaces**
  - **Transmit customer meter data & current distribution system conditions to LSEs to support their CAISO bidding & scheduling**
  - **Support direct DER participation in CAISO markets through timely provision of current system conditions & non-discriminatory curtailment procedures**

*** Operational needs are identified by analogy to CAISO's core functional role as operator of the bulk system & wholesale market; to be refined in designing the transactive network & markets**

Maximizing the Benefits of DERs

Communities & customers of all types want DERs

- DER costs & performance keep improving while grid costs keep rising
- *Grid defection* becomes increasingly cost-effective for customers with financial resources — businesses & affluent homeowners
- Grid defection will worsen energy inequities

The open-access transactive network is the better alternative

- Rewards customers for staying connected & participating
- Makes DERs accessible to more customers by providing revenue opportunities to defray DER investment cost

How does an open-access transactive network contribute to achieving the goals?

Unlock economic opportunities for DERs to provide grid services

The open-access transactive network will

- **Enable DER owners to monetize the capabilities of their assets**
- **Incentivize DER owners, Aggregators & LSEs to optimize DER performance to support grid functioning & offset needs for grid investment**
- **Stimulate private investment in DERs & DER aggregation technologies**

Achieving the goals — 2

Reduce ratepayer costs

The open-access transactive network will

- **Make it commercially viable to deploy local supply to meet local demand, reducing need for bulk system G & T investment**
- **Incentivize DER Aggregators & LSEs to coordinate customer DERs to flatten circuit & transformer load profiles, reducing D investment needs**
- **Enable ratepayers who deploy DERs to monetize the performance of their assets**
- **Incentivize private investment in DERs to reduce ratepayer risks related to DER performance & obsolescence**

Achieving the goals — 3

Increase equity

The open-access transactive network will

- **Democratize electricity services**
- **Enable Energy Justice communities to own & operate participating DERs to generate revenue & build community wealth**
- **Make DERs more affordable to low-income ratepayers by monetizing the capabilities of their assets**
- **Incentivize DER Aggregators & LSEs to engage customer DERs to increase hosting capacity in distribution constrained areas**
- **Reduce use & speed removal of fossil peakers & BUGs in EJ communities**

Achieving the goals — 4

Support grid resiliency

The open-access transactive network will

- **Support commercialization of microgrids by enabling them to function as dispatchable resources under blue-sky conditions to provide grid services**
- **Stimulate private investment in grid-forming front-of-meter DERs to support islanding during grid outages**
- **Enable layering of system architecture to prevent propagation of grid failures to larger areas**

Achieving the goals — 5

Limit market power

Sources of market power

1. **control of bottleneck asset — distribution interconnection**
2. **control of bottleneck asset — grid & customer data**
3. **leveraging monopoly advantage in competitive services**

The open-access transactive network requires the DSO regulatory framework to address 1, 2, 3

4. **Locational advantage for needed grid services**

The open-access transactive network & growing DER deployment will stimulate competition to provide grid services

Achieving the goals — 6

Meet state policy objectives

The open-access transactive network will

- **Accelerate *electrification* by incentivizing deployment of local supply resources to meet local electrification demand growth**
- ***Reduce fossil peaker use* by rewarding optimal DER performance**
- **Enhance local *energy resilience* by stimulating private investment in microgrids**
- **Advance *Energy Equity* by enabling locally-owned DERs to monetize their performance capabilities to earn revenues to offset their costs and build wealth for EJ communities => <u>democratizing energy services</u>**

Achieving the goals — 7

Efficiently operate a high-DER grid

The open-access transactive network will

- **Provide transparent, reliable mechanisms for DER owners to transact economically for energy & grid services needed by the DSO**
- **Incentivize DER owners, Aggregators & LSEs to optimize DER performance to meet grid operational needs**
- **Create incentives for all participants to shape DER behavior & flatten net load profiles to respect system constraints & make day-to-day network operation more stable & predictable**

Thank you.

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