ConnectDER

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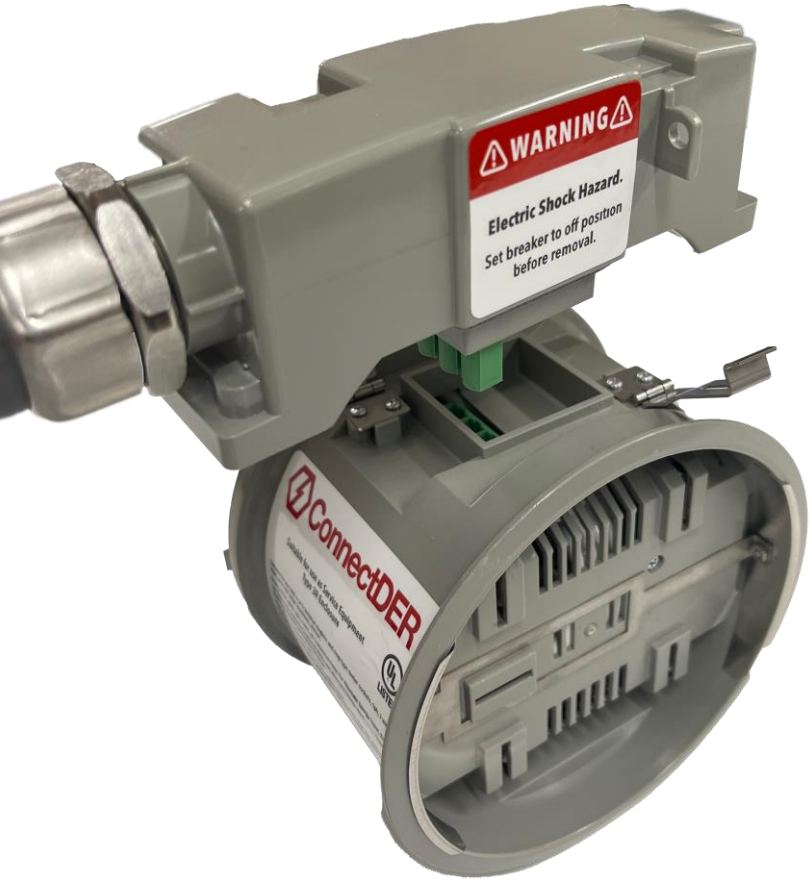
PSEG LONG ISLAND*

March 17, 2022

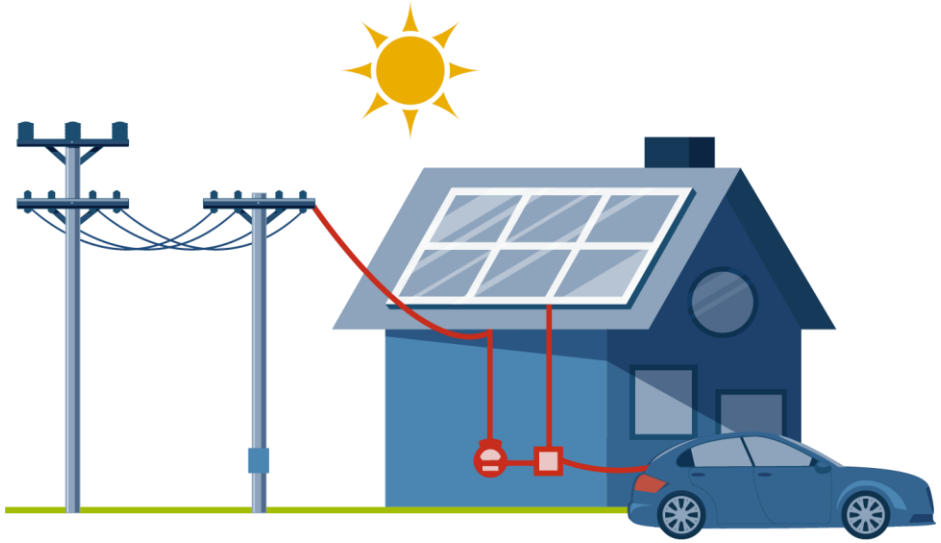
*Please note that PSEG Long Island doesn't endorse any product listed on this presentation

Agenda

- Company + solution overview
- Best practices
- Con Ed experience



ConnectDER turns the meter socket into the utility's all-in-one integration point for distributed energy resources (DERs).



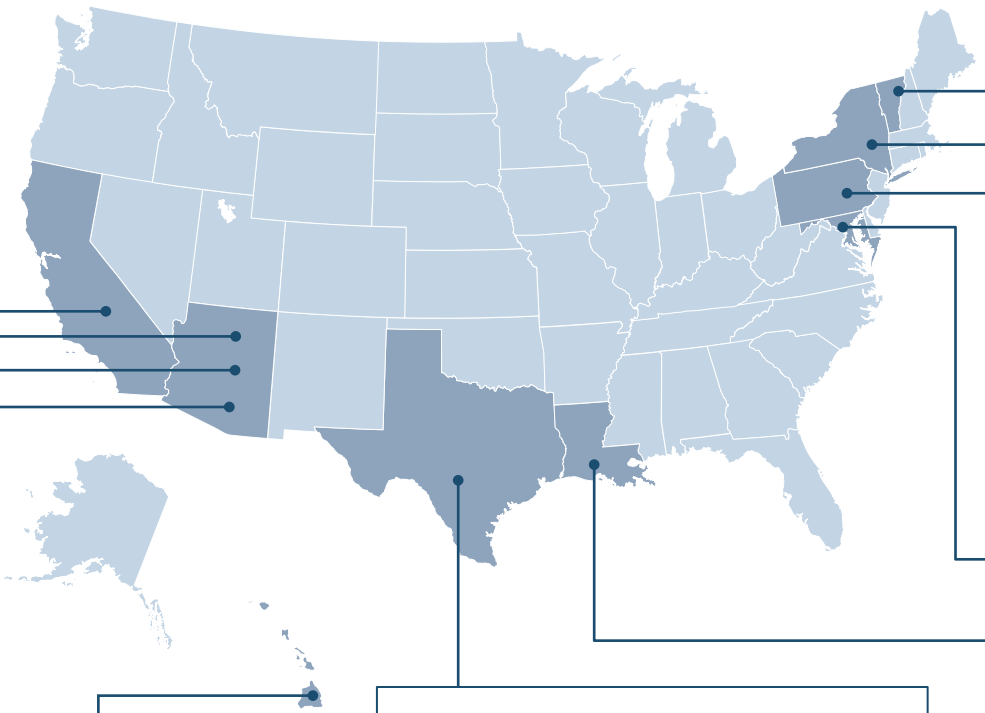
DO MORE AT THE METER

Where are we today?

12,000
Units
Deployed

11
Major Utility
Customers

ConnectDER Solar Deployments



- LA DWP — Utility front of meter solar program
- aps — Utility front of meter solar program
- SRP — Utility solar inter connection
- TEP — Utility front of meter solar program
- Hawaiian Electric — Monitoring & management for solar, EV's, and storage
- Austin Energy — Microgrid project with solar management
- Green Mountain Power — Open market for solar connection
- conEdison — Customer program for solar connection & monitoring
- ppl — Customer program for solar connection & management
- Exelon — Customer program for solar connection & monitoring
- Entergy — Utility front of meter solar program

FEATURES

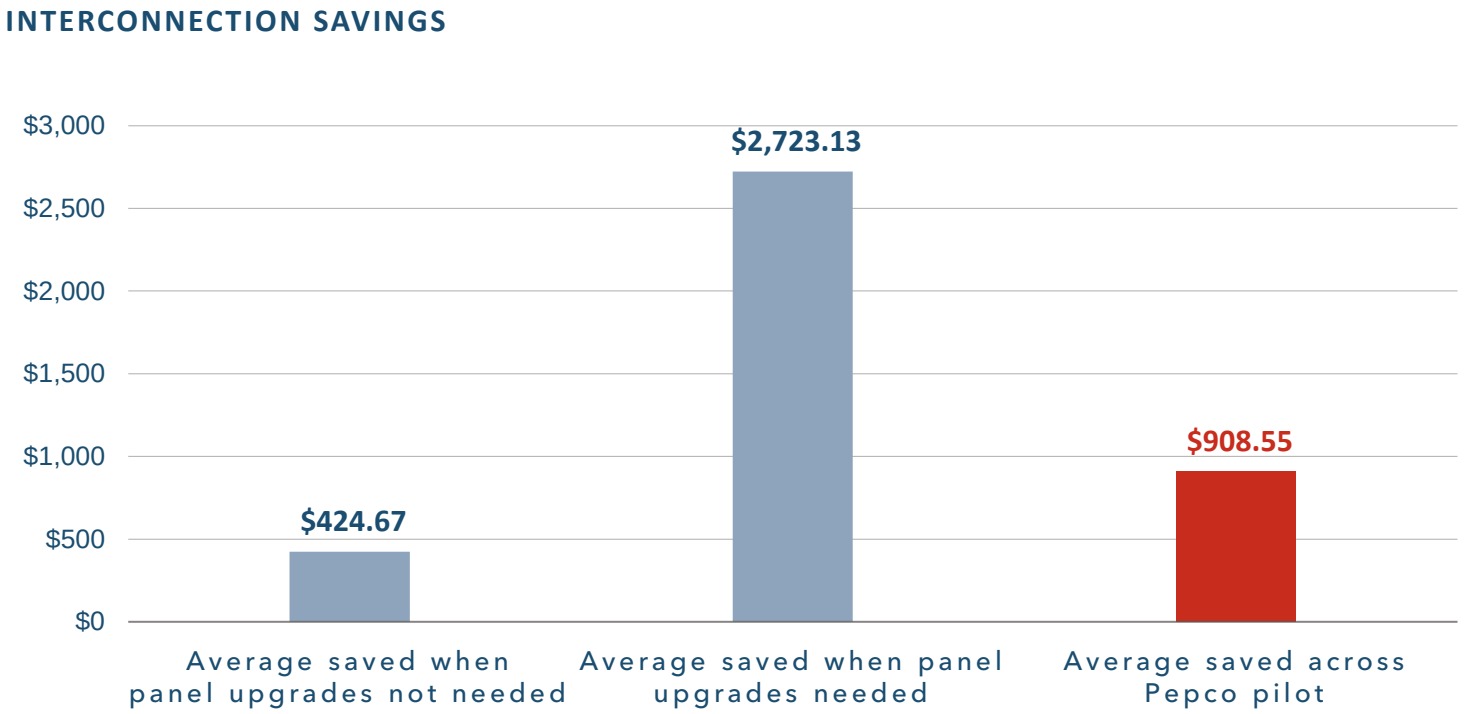
- Directly interconnects any PV system
- Works on 2S or 12S
- Optional secure cellular or AMI communications w/ customer production portal

BENEFITS

- Eliminate the need for line side taps
- Consistent, standardized, safe means of PV interconnection
- Reduce truck rolls and time onsite
- Lower cost installation for customer: avoids panel upgrades and wiring headaches
- No need for installer to enter residence and other logistics
- Can provide utility data/control, serve as production meter

ConnectDER

Our Solution is Proven to Reduce Interconnection Costs



AVERAGE OF $900 SAVED IN INTERCONNECTION COSTS DURING DER INSTALLATION

Source: GRID Alternatives, PEPCO pilot

New York has nation-leading clean energy targets

- 70% Clean energy by 2030
- 100% Zero emission energy by 2040

Simple scalable solutions will be crucial to help reach them

REPLACE THIS…

…WITH THIS

Two Versions

Solar Collar: Power Only

- Circuit breaker <= 60amps
- Standardized terminals
- UL Listed

+ Smart Module: Power & Data

- Revenue grade metering
- Modular communications

Best Practices for Successful Technology Adoption

ConnectDER has worked with utilities throughout the country to deploy meter adapters. This is a common workflow for adopting the technology.

1. Require photograph of meter socket as part of application
   - Ensures initial approval criteria with minimal effort by utility personnel
2. Allow solar installers to source approved collars from distributors, rather than from the utility
   - Minimize time and logistics by utility personnel
   - In the event of multiple approved meter collars, the utility can avoid needing to stock several devices
3. Train and Credential solar installers to pull meter and self-install adapter
   - Reduces truck rolls, saves time and money for the utility
   - We suggest requiring a pre-emptive training and utility ride-along on first 3 installations, to ensure quality
4. Send meter tech to do final inspection
   - Require remediation on non-conforming installations
   - Require recertification for repeat offenders

Suggested Meter Shop Test Program

ConnectDER meter collar adapters have undergone significant testing internally, with UL and ANSI, and with partner utilities.

The common testing protocols are listed to the right.

We are happy to provide any results, certification test results, or guidance on testing best practices to support these efforts.

1. Fitment Testing *(typically 1-2 days)*
    - Ensure meter collar interoperability with utility meters and approved meter sockets.
    - ANSI C12.7 and C12.10
2. Billing Meter Accuracy *(typically 2 weeks)*
    - Confirm meter operates within parameters during the following tests.
        - ANSI C12.20
        - Test 1: No Load
          Test 2: Starting Load
          Test 3: Load Performance
          Test 4: Effect of Variation of Power Factor
          Test 5: Effect of Variation of Voltage Test 6: Effect of Variation of Frequency
          Test 7: Equality of Current Circuits
          Test 8: Internal Meter Losses
          Test 9: Temperature Rise
3. Heating Test
    - Ensure meter collar stays within allowable thresholds at maximum rated current.

Con Edison ConnectDER Experience

- Device/Program Details

Model: V3 Smart ConnectDER

- DER powers load side of meter
- Breaker size customizable to DER
- Revenue grade DER production CT
- Two-way cellular communications
- 15-minute data collection*
- Remote relay can “shut down” DER
- Installed by Con Edison Meter & Test field technicians

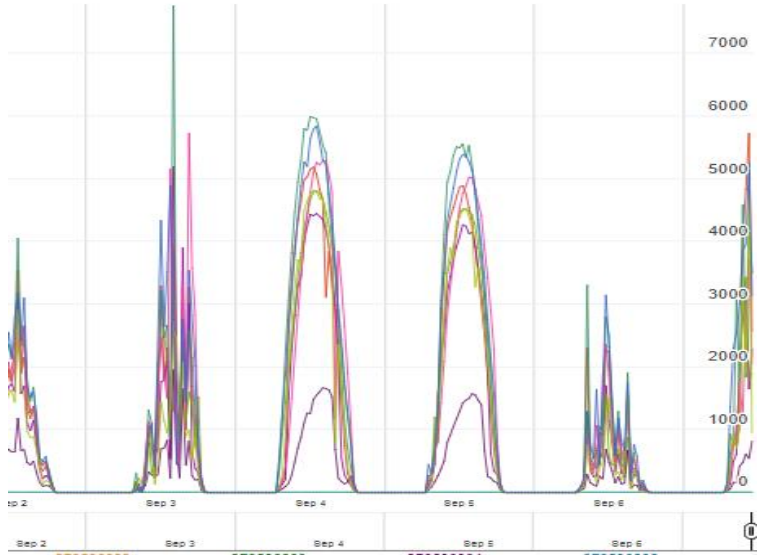
* = Available down to 1-min data collection, cloud upload frequency will vary.

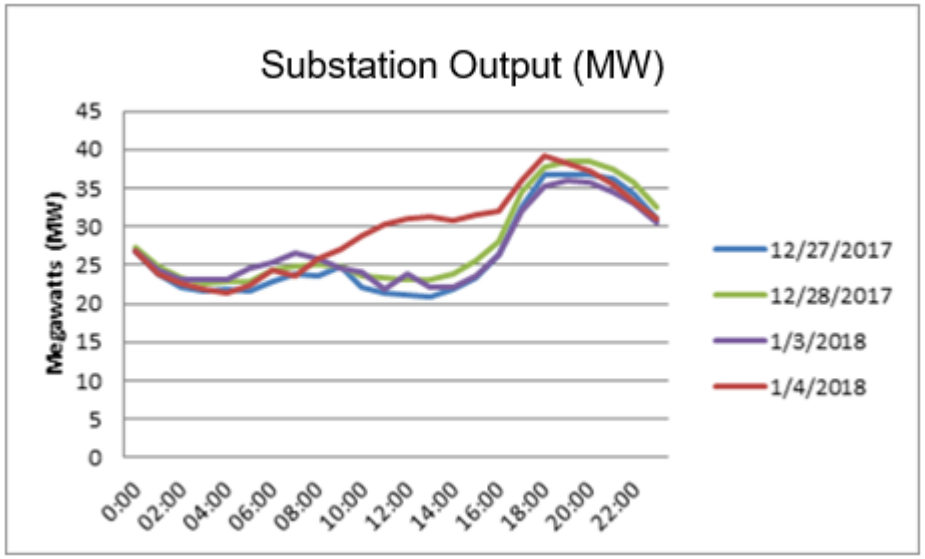
Con Edison ConnectDER Experience

- Operational Knowledge

From Duck Curves to DERMS

- ConnectDER Data identified an emerging "Duck Curve" in Staten Island (where pilot units deployed).
- ConnectDER data used to interpolate solar availability and production for nearby systems.
- NYSERDA Pilot: passing data from ConnectDER units to 3rd Party to forecast solar down to a circuit level.





References

Personnel from some of our partner utilities have kindly agreed to provide guidance about their experience adopting meter collar adapters, best practices, and common things to consider.

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