Raghav Murali
Powerflex

Multiple Onsite Solutions, One Point of Contact

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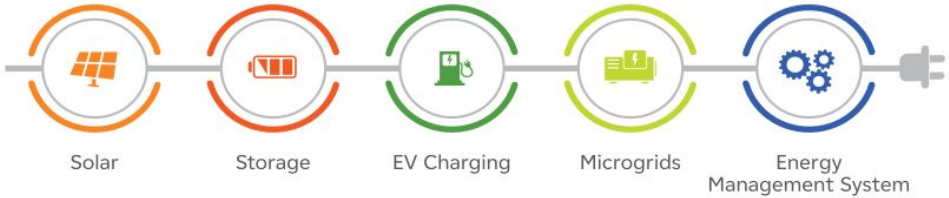
PowerFlex is a national provider of renewable energy infrastructure with a comprehensive suite of flexible, turnkey solutions designed to transform any organization into a clean-energy facility.



EDF renewables
Manulife

- We develop and manage construction of on-site Solar, EV charging and Storage solutions for corporate, non-profit and local government clients
- PowerFlex X is our Google Cloud-powered energy management system
- We are majority owned by EDFR with a minority stake owned by Manulife

Grid Services Best Practices

Simplify and Streamline

Adopt the "8.5 x 11" Principle
Incentives shouldn't be complicated. Key program requirements should fit on a single sheet of paper, so everyone understands requirements and economics.

Streamline Administrative Complexity

Program should be consistent across utility service territories or be administered by a single Statewide administrator to avoid market, installer and customer confusion.

Stackable Incentives

Allow customers to stack DG incentives and performance payments across IL programs to avoid confusion and maximize value proposition.

Incentivize Resiliency

Performance Payment
Provide performance payment that compensates the customer for grid services in an understandable and predicable way, as opposed to complex requirements that degrade customer value proposition and compromise asset usability.

Reasonable Terms & Conditions

Program terms and conditions should be focused in scope, non-exclusionary, mutually protective, and contain reasonable data and dispatch provisions.

Enable Technology

Measure at the Inverter
Measure load at the inverter to eliminate need for problematic baselines and deliver more accurate and dynamic grid benefits.

Aggregator Model

Adopt 3rd party aggregator model to allow aggregators to communicate with a significant number of BTM resources, creating virtual power plants to help meet grid needs and ensure wide program participation.

DSGS is a CA BTM energy storage program that was shaped by PowerFlex

Program Overview

Budget: ~$300MM - Could be expanded in future years

Event Triggers: Events occur in 4pm – 9pm window when day-ahead LMPs >$200/MWh

Compensation: $62-82/MWh (Incentive levels available for VPPs of varying durations, incentive rates vary by month)

Participants are awarded additional 30% bonus on incentives in 2023 & 2024

Features and Benefits

✓ Highly stackable with energy arbitrage: in most cases 100% of both energy arbitrage and DSGS revenues can be captured simultaneously

✓ No load baselines: performance based on BESS discharge, regardless of the building load status (import or export)

✓ No penalty for underperforming

Other states including CO, MD, NJ, and NY are actively pursuing DSGS-type programs now

PowerFlex 2023 DSGS Participation

- PowerFlex portfolio comprised of 6 BESS sites
- Further optimization in 2024 given late program start

2023 DSGS portfolio:
3.2 MW / 8.7 MWh

Sycuan Casino · Resort
CUBIC
San Diego Zoo Wildlife Alliance
EDF
COX Enterprises
Sanford Burnham Prebys

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ELRP vs DSGS

DSGS ProgramSummary

DSGS Program Guidelines

	ELRP	DSGS – Option 3
Status	3rd year of pilot	Still under development – expected start Summer 2023
Number of events per year	Depends on participation status	5 to 35
Duration of events	Up to 4 hours	Up to 2, 3 or 4 hours depending on subscription
Possible window of events	4pm – 9pm	4pm – 9pm
Event Trigger	Triggered by IOUs	CAISO (NP-15, SP-15, Z-26) day-ahead price > 200 $/MWh
Compensation	2.0 $/kWh discharged during events	Up to 32$/kWh of enrolled capacity/year
Scope / Geography	3 IOUs (PG&E, SCE, SDG&E)	POU, CCA, IOU
Enrollment Requirements	N/A	Must get utility permission to enroll POU or CCA customers
Baseline	Yes	No/Minor Baseline
Dual Participation	Not allowed to participate in other DR programs	Not allowed to also participate in ELRP
Technology Type	Multi tech (storage, EVSE)	Storage only
Pros	No penalty for non- or under performance	No baseline, market-informed, no penalty for non- or under performance, self event signal
Cons	Baseline ☹	New

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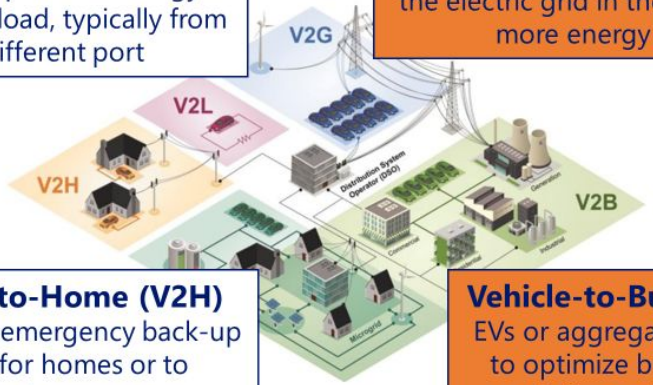
V2G, V2B

Vehicle-to-Load (V2L)
EV battery provides energy to a specific load, typically from a different port

Vehicle-to-Grid (V2G)
EV batteries used to provide value to the electric grid in the form of one or more energy services



Vehicle-to-Home (V2H)
EV used as emergency back-up power for homes or to optimize home energy consumption

Vehicle-to-Building (V2B)
EVs or aggregated fleets used to optimize building or site (micro-grid) energy consumption

V1G: Managed charging, unidirectional

V2X: Managed charging and discharging, bidirectional, to provide energy services and derive additional value from EV during times of non-use

PowerFlex is actively developing V2G and V2B offerings for fleet customers

V2G

V2G provides incentives via Grid Services programs

Grid services revenues can offset cost of V2X chargers and provide additional revenue stream along with opportunity to support grid

V2B

Resiliency an option via V2X equipment

V2B economics demonstrate huge peak-shaving potential

Can combine V2B savings with V2G grid services revenues for additional value

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