ENGINEERS GUILD / SUSTAINABILITY

Demand-Side Management

Demand response, distributed energy resources and virtual power plants for a flexible, affordable power system.

SERVICE PROFILE

A detailed overview of scope, capabilities and potential areas of support.

Overview

Rising peak demand, high capacity costs and the rapid growth of rooftop solar are changing how power systems must be planned and operated. Flexibility on the demand side, from consumers, buildings and distributed energy resources, is now one of the most cost-effective ways to manage peaks, integrate renewable energy and reduce consumer bills.

Engineers Guild helps utilities, system operators, regulators and large energy users turn this flexibility into a reliable system resource. Our Demand-Side Management services cover the full chain: designing DSM programs and incentives, developing demand response and aggregation models, integrating distributed energy resources (DERs), and establishing virtual power plants (VPPs) and grid-interactive buildings, supported by the regulatory and market frameworks that make them work.

Our Services

Our demand-side management services are organized into four areas.

i. Demand-Side Management Programs

DSM Program Design & Implementation
Design of DSM programs for utilities, government agencies and large users, covering target segments, measures, incentives, delivery models, budgets and implementation plans.

Peak-Load Reduction (Technical & Behavioral)
Technical measures such as load shifting, controls and storage, combined with behavioral programs, to reduce peak demand and the associated capacity costs.

Load-Profile Analytics & Flexibility Assessment
Analysis of interval metering data to identify peak contributors, flexible loads and savings potential by consumer category, sector and end use.

DSM Tariffs & Incentive Design
Time-of-use, critical-peak and incentive structures that reward consumers for shifting or reducing demand at the times that matter most to the system.

Measurement & Verification (M&V)
Baselines, M&V plans and savings verification to IPMVP principles, so that program impacts are credible to regulators, funders and participants.

ii. Demand Response (DR)

DR Program Design
Design of incentive-based and price-based demand response programs, including eligibility, event triggers, notification, performance requirements and payments.

DR Aggregation & Market Participation
Business models, registration and operating frameworks for DR aggregators participating in system operator programs and the emerging competitive electricity market.

Industrial & Commercial DR Potential Assessment
Site-level assessment of curtailable and shiftable loads, on-site generation and storage at industrial and commercial facilities, with the value they can offer.

Baseline, Dispatch & Settlement Methodologies
Customer baseline methods, dispatch protocols, performance measurement and settlement rules for demand response resources.

iii. Distributed Energy Resources (DER)

DER Integration & Hosting Capacity Studies
Assessment of the impact of rooftop solar, battery storage and other DERs on distribution networks, including hosting capacity and reinforcement needs.

Behind-the-Meter Solar & Storage Optimization
Sizing and operating strategies for on-site solar PV and battery energy storage (BESS) that reduce energy and demand charges and provide grid support.

EV Smart Charging
Assessment of electric-vehicle charging demand and managed-charging strategies that avoid network peaks and make use of surplus renewable energy.

DER Interconnection & Net-Metering Frameworks
Technical requirements, standards and regulatory frameworks for connecting DERs to the grid, including net-metering and gross-metering arrangements.

iv. Virtual Power Plants (VPP) & Flexible Buildings

VPP Concept, Architecture & Business Models
Design of virtual power plants that aggregate DERs, storage and flexible loads into dispatchable resources, including control architecture, revenue streams and stakeholder roles.

Grid-Interactive Flexible Buildings
Building design and controls, including HVAC, thermal storage and building management systems, that allow buildings to respond to grid signals, linked with energy codes such as ECBC.

DERMS, Smart Metering & Communication Requirements
Functional requirements for DER management systems, advanced metering and communication platforms that give operators visibility and control of distributed resources.

Regulatory & Market Frameworks for Flexibility
Policy, regulatory and market rules that enable demand response, DERs and VPPs to participate in system operation and the electricity market.

Our Approach

- Assess: analyze load profiles, flexible resources and the system, tariff and regulatory context.
- Design: develop programs, business models, tariffs and technical requirements suited to the target segments.
- Pilot: test programs and technologies with selected participants, and refine them based on measured results.
- Scale: support rollout, aggregation, platform procurement and stakeholder engagement.
- Verify: measure and verify demand reductions and savings, and report results to stakeholders.

Who We Work With

- Distribution companies and system and market operators
- Energy regulators, ministries and government agencies
- Large industrial and commercial energy users
- Real-estate developers and building owners
- DR aggregators, DER developers and technology providers
- Development finance institutions and donor programs

Value to Clients

- Lower peak demand and reduced capacity and network costs
- Lower energy bills and new revenue from flexibility for consumers
- Greater integration of rooftop solar and other renewable energy
- Deferred investment in generation and network infrastructure
- Credible, verified results for regulators, funders and participants

Contact Us

To discuss your project requirements, please contact:

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