

DEDALUS Policy Recommendations for Residential Demand Response

ABSTRACT

The DEDALUS Policy Recommendations provide EU and national energy policymakers 6 recommendations for the upscaling of EU-wide residential demand response. The policy recommendations are based on the DEDALUS pilot sites' experience and two policy roundtables with experts in energy policy across industry, academia, EU projects and EU authorities. Furthermore, the recommendations have taken into consideration the forthcoming Network Code on Demand Response, which will be adopted in mid-2026. The DEDALUS recommendations try to close any gaps in the draft of the Network Code, which emerged from the work in the DEDALUS pilot sites.

KEY POINTS

- Data & interoperability
- IoT certification and standardisation
- Independent aggregators
- Energy communities as aggregators
- Social & just transition
- Energy literacy

1 ESTABLISH A LEGAL AND TECHNICAL PATHWAY ALLOWING SUB-METERS AND DMDs TO BE USED FOR ENERGY FLEXIBILITY VALIDATION, DECOUPLING DR ELIGIBILITY FROM FISCAL SMART METER ROLLOUT

National Regulatory Authorities, guided by EU-level monitoring from ACER, should mandate harmonised data access standards and legitimise DMDs as valid metering instruments — alongside smart meter gateways — to ensure that residential flexibility can be measured, verified and traded across borders, by enabling a parallel virtual/sub-metering architecture validated through TSO-led pilot programmes, within 2–3 years.

2 DEVELOP AND MANDATE A DEDICATED 'IOT FOR ENERGY' CERTIFICATION STANDARD COVERING RELIABILITY, DR COMPATIBILITY, AND MINIMUM PERFORMANCE THRESHOLDS FOR RESIDENTIAL SMART DEVICES

The European Commission, in coordination with system operators and national regulators, should develop a European certification pathway for flex-ready IoT devices and DMDs — including cybersecurity and interoperability standards — to ensure that pre-qualification barriers do not exclude valid flexibility resources, by drawing on ACER's ongoing monitoring exercise on DMD conditions and feeding outcomes into a European methodology under the Network Code on DR, within 3 years, while avoiding overly prescriptive standards that could lock out AI-based and emerging measurement approaches.

3 ESTABLISH CLEAR LEGAL STATUS AND RIGHTS FOR INDEPENDENT AGGREGATORS

The European Commission and National Regulatory Authorities should establish a clear, legally binding framework granting independent aggregators the right to contract directly with residential consumers — without requiring supplier or Balance Responsible Party consent — to ensure competitive market entry and genuine flexibility liquidity, by removing incumbent veto points in national market access rules. This definition of aggregation model standards should be implemented within 2–3 years with no further delays.

4 SUPPORT RENEWABLE ENERGY COMMUNITIES AS AGGREGATED FLEXIBILITY PROVIDERS

National legislators, supported by EU cohesion and energy policy frameworks, should formally recognise renewable energy communities (REC) as eligible aggregated flexibility providers in residential DR markets. This means coupling REC legislation with explicit DR programme access rights and enabling community energy managers to act as DR coordinators. The EU should accelerate and monitor national transposition of the Citizens Energy Community and REC provisions under the Clean Energy Package (Electricity Directive 2019/944 Art. 16 and RED II Art. 22). ACER should publish a harmonisation benchmark and the EC should issue

REFERENCES

D6.4: DEDALUS

Comprehensive Replication
Methodology and Roadmap

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LEARN MORE ABOUT DEDALUS PROJECT

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guidance on minimum national implementation standards. Responsibility sits primarily with national legislators and the EC. Target: within three years.

5 EMBED SOCIAL AND JUST TRANSITION KPIS IN EU DEMAND RESPONSE POLICY FRAMEWORKS

Ministries — rather than energy regulators alone, given the absence of a legal basis in the Network Code on DR — should legislate minimum consumer protection standards in aggregator contracts, particularly prohibiting the pass-through of aggregator penalties to residential customers. Flexible tariff design must not disproportionately burden lower-income households. This requires introducing opt-out rights, transparent contract templates, and social leasing instruments for smart devices analogous to existing EV social leasing schemes. Social and just transition KPIS — including care-sensitive indicators and gender-responsive programme design — should be embedded in DR programme evaluation frameworks. Responsibility sits with national ministries and the EC. Target: within one to three years.

6 FUND TARGETED ENERGY LITERACY PROGRAMMES FOR LOW-ENERGY-LITERACY AND VULNERABLE GROUPS

EU Cohesion and Just Transition funds should co-finance standardised but locally adaptable awareness campaigns, workshops, and hands-on demo sessions on energy and DR. Delivery should be community-embedded — channelled through organisations residents already know and trust, such as housing associations, energy cooperatives, and social care providers — in addition to broadcast campaigns from utilities or government agencies. Materials should be multilingual, plain-language, and distinguish between general energy literacy and DR-specific literacy, as these require different conversations. The EC should provide a shared base toolkit that national programmes adapt rather than rebuild from scratch. National regulators should make participant literacy onboarding a mandatory prerequisite for DR programme launch, not an optional extra. Responsibility sits with both the EC and national regulators. Programmes should be funded and operational within one to two years.

META RECOMMENDATION

Across the 7 DEDALUS pilot sites, as well as the 2 policy sessions with DR energy experts, it became clear that one overarching issue with residential demand response is the implementation of existing regulation. We therefore provide an overarching, meta recommendation:

ESTABLISH AN EU-LEVEL DEMAND RESPONSE IMPLEMENTATION & GOVERNANCE FRAMEWORK COVERING TECHNICAL, MARKET AND SOCIAL DIMENSIONS

The EC should establish a robust, time-bound governance framework to ensure that DR is implemented in practice across Member States as an integrated system spanning technical infrastructure, market design and social outcomes, and does not just live on paper.

This framework requires:

- **Technical monitoring:** Progress on interoperability, data access, smart devices, and validation methods (including DMDs and sub-metering)
- **Market monitoring:** Effective participation of independent aggregators, energy communities, and cross-border scalability of flexibility services
- **Social monitoring:** Consumer protection, accessibility, energy literacy, and distributional impacts across different household groups

Member States should report annually against a harmonised set of KPIS across all three dimensions, supported by:

- a public benchmarking system comparing national performance
- structured knowledge-sharing integrating pilot evidence (e.g. DEDALUS)
- targeted support measures for lagging implementation
- escalation mechanisms, including infringement procedures, for persistent non-compliance

By linking technical readiness, market functionality and social fairness within a single governance mechanism, the framework ensures that DR is not only deployed, but deployable, scalable, and societally accepted across the EU.