
NetEdison Community Utility

Phase 1 Business Plan (Draft)

A small, local, not-for-profit electric utility on the EnergyNet Protocol

Working draft for member, partner, and counsel review
August 2026

Executive Summary

NetEdison Community Utility ("the Utility") is a small, local, not-for-profit electric distribution utility built on a new physical and logical architecture: underground DC wires interconnected by Energy Routers running the EnergyNet Protocol (see [NetEdison.com](https://netedison.com)). Where the legacy grid is centralized and fragile, the Utility's network — like the Internet — routes around failure and buys energy from the cheapest available source, hour by hour, whether local (rooftop solar, community batteries) or remote (the greater interconnected distribution grid via a DC interconnect).

The business model in one paragraph. The Utility sells delivered energy to members at \$100–\$200 per MWh and procures supply at \$40–\$80 per MWh, yielding a gross margin of \$20–\$160 per MWh with a planning midpoint of \$90. That margin must cover a fixed-cost floor that exists at any scale: a minimum staff, an operations center, debt service on wires, routers, meters, and the grid interconnect. The central finding of this plan is that **the fixed-cost floor — not the margin — determines viability**. Below roughly 1,000 meters the Utility operates at a loss under almost any realistic pricing; at approximately **1,400–1,500 meters (15,000–16,500 MWh per year sold)** the Utility breaks even at mid-range pricing; and at 3,000 meters it generates approximately **\$1.07M per year of net margin**, which a not-for-profit returns to members as rate reductions, capital credits, or reinvestment.

Phase 1 commitment thresholds:

Metric	Minimum viable (Base)	Comments
Meters energized	~1,500	Mixed residential + small commercial, or anchor C&I equivalent
Energy sold	~16,500 MWh/yr	11 MWh/meter/yr average
Retail price	~\$150/MWh	Within the \$100–\$200 band
Average procurement cost	~\$60/MWh	Blend of local PPAs and remote grid purchases
Capital investment	~\$6.9M	Wires, routers, meters, DC interconnect, operations center
Annual fixed costs	~\$1.40M	Personnel, ops center, O&M, G&A, debt service
First-year net margin	~\$81k	Thin but positive; strong operating leverage thereafter

Why not-for-profit, and why now. Both major legal systems now provide a purpose-built home for this entity. In the United States, the electric cooperative model — anchored by the Rural Electrification Act of 1936 and federal tax exemption under IRC §501(c)(12) — has operated member-owned distribution utilities for ninety years. In the European Union, the Clean Energy Package created Citizen Energy Communities (Directive (EU) 2019/944, Art. 16) and Renewable Energy Communities (Directive (EU) 2018/2001, Art. 22), which are expressly entitled to own and operate distribution networks, share energy among members, and access all energy markets. Appendix C provides the legal references.

The structural advantages of the EnergyNet architecture directly reduce the two largest cost blocks: (1) low-voltage DC in fiber-style narrow trenches targets the low end of published underground

construction costs; and (2) metering and telemetry are native to the Energy Router Operating System (EROS) and Energy Network Management System (ENMS), eliminating a separate advanced-metering communications network.

The ask. Phase 1 requires (a) pre-commitment of ~1,500 meters or anchor-load equivalent before energization, (b) ~\$6.9M of capital at not-for-profit terms (municipal-style revenue bonds, grants, or member capital), and (c) long-term local supply agreements at the low end of the \$40–\$80/MWh band to protect the margin against the worst-case pricing scenario, which never reaches break-even at neighborhood scale.

1. The Company

1.1 Mission

To deliver affordable, resilient, locally governed electricity by internetworking energy — applying the Internet's architecture of open protocols, packet routing, and distributed control to the distribution of electric power.

1.2 Legal form

The Utility is organized as a not-for-profit, member-owned cooperative (US) or an energy community/cooperative society (EU), consistent with the seven Rochdale cooperative principles: open membership, democratic member control (one member, one vote), member economic participation, autonomy, education, cooperation among cooperatives, and concern for community. Net margins are not distributed to outside shareholders; they are returned to members or reinvested in the network.

1.3 Relationship to NetEdison

EnergyNet is an open standard for internetworking electricity. NetEdison is the trademarked commercialization engine for the protocol. The Utility is a reference deployment: the first-phase operating company that proves the unit economics of a protocol-based, DC-native community utility. Field antecedents include the 2001 Union Street forerunner case study (San Francisco) and the Lund, Sweden energy-networking deployments connected with ViaEuropa and the municipal energy programs.

2. The Service and Technical Architecture

2.1 What members buy

Delivered electric energy, billed per MWh at \$100–\$200/MWh depending on member class and service tier, over a new underground DC distribution network. Members retain the option of local generation and storage behind their Energy Router; the Utility settles flows in both directions.

2.2 Network architecture

- **Underground DC wires.** New-build low-voltage DC distribution (± 750 VDC class planes) in narrow, fiber-style trenches. DC eliminates transformer vaults, reduces conductor and conduit requirements, and permits microtrenching techniques proven in fiber-to-the-premises construction.

- **Energy Routers.** Premise-level routers enforce galvanic separation and route energy flows over a DC backplane under software control. Block-level routers aggregate approximately 250 services. Four logic port types support generation, storage, load, and network interconnection.
- **Control plane.** The Energy Router Operating System (EROS) and EP Server, supervised by an Energy Network Management System (ENMS) in the operations center. Telemetry, metering, and settlement are native functions of the control plane — no separate metering network is required.
- **Grid DC interconnect.** One AC/DC converter station at the network edge interconnects the Utility with the greater distribution grid. This is both the resilience backstop and the procurement gateway for remote energy purchases at \$40–\$80/MWh.
- **Communal Park anchor node.** Where available, one or more Communal Parks (Appendix E) function as the network's first energized node: a civic utility room that combines local generation, thermal and water infrastructure, and public-facing load in a single site the community experiences directly. Parks can be sequenced ahead of residential buildout in both greenfield and renovation contexts, giving the Utility a revenue- and load-bearing anchor before individual member connections are complete.

2.3 Why this architecture lowers cost

1. **Wires.** New underground distribution in the US runs roughly \$297,000 per mile (rural) to \$2.3M per mile (suburban) for conventional AC construction ([EEI data via NAWPC](#)); state survey data show new underground construction as low as \$40,000–\$1.5M per mile depending on conditions ([Virginia SCC](#)). LVDC microtrenching targets the low end of these ranges — this plan assumes \$350,000 per mile.
2. **Meters.** US Department of Energy Smart Grid Investment Grant data put full AMI deployment at \$130–\$600 per meter for most projects ([DOE AMI Summary Report](#)). Because EnergyNet metering rides the router control plane, this plan assumes \$300 per meter with no separate communications network.
3. **Operations.** A micro-utility can run lean: Ontario's Hydro 2000 distribution utility operates with three full-time employees ([OEB rate filing](#)) — but its filing also proves the fixed-cost floor thesis: even the smallest staffed utility carries roughly \$687,000 per year of operating cost, which must be recovered from the member base.

3. Phase 1 Operating Model

3.1 Pricing and gross margin

Scenario	Retail price	Procurement cost	Gross margin per MWh
Worst	\$100	\$80	\$20
Mid (planning case)	\$150	\$60	\$90
Best	\$200	\$40	\$160

Procurement blends local sources (behind-the-router solar, community storage discharging at off-peak-charged prices) with remote purchases through the grid DC interconnect. The Energy Router

network performs least-cost dispatch hour by hour; the wider the portfolio of sources, the closer the realized cost sits to the bottom of the band.

3.2 Build scenarios

	Lean (500 meters)	Base (1,500 meters)	Growth (3,000 meters)
Energy sold	5,000 MWh/yr	16,500 MWh/yr	36,000 MWh/yr
Revenue @ \$150/MWh	\$750,000	\$2,475,000	\$5,400,000
Power purchases @ \$60/MWh	\$300,000	\$990,000	\$2,160,000
Gross margin @ \$90/MWh	\$450,000	\$1,485,000	\$3,240,000
Total capital cost	\$2,707,500	\$6,922,500	\$12,895,000
Annual operating cost	\$674,150	\$953,450	\$1,332,900
Annual debt service (5%, 30 yr)	\$176,127	\$450,319	\$838,838
Total annual fixed costs	\$850,277	\$1,403,769	\$2,171,738
Net margin	-\$400,277	+\$81,231	+\$1,068,262
Net margin per meter per month	-\$66.71	+\$4.51	+\$29.67

3.3 Capital budget (Base case, 1,500 meters)

Component	Assumption	Cost
Local DC wires	10 miles microtrenched underground @ \$350k/mile	\$3,500,000
Energy Routers	\$1,200/premise router + \$60k per block router (~250 meters each)	\$2,160,000
Meters (router-native)	\$300/meter	\$450,000
Grid DC interconnect	~2.3 MW converter station @ \$250/kW (3 kW diversified peak/meter, 50% coincidence)	\$562,500
Operations center setup	ENMS, EP Server, billing, dispatch	\$250,000
Total		\$6,922,500

3.4 Personnel plan (Base case: 5 FTE, ~\$650,000/yr loaded)

Role	FTE	Responsibility
General Manager	1.0	Governance, regulatory, member relations, supply contracting

Role	FTE	Responsibility
Network Operations Engineer	1.0	EROS/ENMS operation, least-cost dispatch, procurement execution
Field Technician	1.0	Wires, routers, service connections, outage response
Billing / Member Services	1.0	Settlement, billing, member support
Finance & Regulatory (shared)	1.0	Accounting, audit, compliance, capital credits

Lean case operates at 3.5 FTE with shared field and finance roles. Growth case adds a second field technician and network engineer (7 FTE).

3.5 Annual operating costs (Base case)

Item	Cost/yr
Personnel (5 FTE @ \$130k loaded average)	\$650,000
Operations center (software, cloud, communications)	\$90,000
G&A (insurance, audit, legal, regulatory)	\$80,000
Network O&M (2% of network capital)	\$133,450
Total operating cost	\$953,450
Debt service (\$6.92M @ 5%, 30 years; CRF 0.0651)	\$450,319
Total fixed costs	\$1,403,769

3.6 Break-even and minimum revenue

Break-even energy sales at Base-case fixed costs:

Gross margin case	Break-even sales	Meter equivalent	Minimum revenue
Worst (\$20/MWh)	70,188 MWh/yr	~6,400 meters	\$7.0M @ \$100
Mid (\$90/MWh)	15,597 MWh/yr	~1,420 meters	\$2.34M @ \$150
Best (\$160/MWh)	8,774 MWh/yr	~800 meters	\$1.75M @ \$200

Three structural conclusions:

1. **The worst-case price pair is not a business.** At a \$20/MWh spread, break-even requires roughly 6,400 meters — far beyond a Phase 1 neighborhood build. The Utility must therefore lock long-term local supply near the bottom of the \$40–\$80 band (PPAs, community solar, storage arbitrage) rather than rely on spot purchases, and must defend a retail floor near \$150/MWh.

2. **Scale before energizing.** Because roughly 85% of the fixed-cost floor is insensitive to volume, the Utility should secure pre-commitments of ~1,500 meters (or an anchor commercial/industrial load of equivalent volume) before construction, mirroring the subscription model of fiber cooperatives.
3. **Operating leverage is the reward.** Beyond break-even, each additional meter adds roughly \$700–\$900 per year of net margin at near-zero marginal fixed cost. A not-for-profit converts this into rate reductions and capital credits, compounding the membership case.
4. **A Communal Park can substitute for part of the anchor-load requirement.** A single park combining local generation, concession rent, and metered public services (Appendix E) is a smaller, faster-to-permit equivalent of the anchor commercial/industrial load described in Finding 2 — it energizes the first node, demonstrates the network publicly, and contributes recurring revenue while residential pre-commitments are still being secured.

3.7 Financing

Not-for-profit status materially improves the model. At municipal-revenue-bond-style terms (5%, 30 years) debt service is ~6.5% of capital per year. Sensitivities:

- **Grant-funding the wires** (the largest capital block, \$3.5M in the Base case) reduces annual fixed costs by ~\$228,000 and lowers Base-case break-even from ~1,420 to under 1,000 meters.
- US electric cooperatives have historically accessed subsidized debt through the USDA Rural Utilities Service under the Rural Electrification Act (Appendix C.1).
- EU energy communities are eligible for enabling-framework support that member states must provide under Art. 22(4) RED II, and may compete for renewable support schemes on adjusted terms under Art. 22(7) (Appendix C.2).

4. Market and Procurement Strategy

- **Local supply first.** Behind-the-router solar and community batteries contract at \$40–\$60/MWh equivalent. Local supply avoids upstream network charges and is the anchor of the procurement stack.
- **Remote supply as balance.** The grid DC interconnect provides firm supply and market access at \$50–\$80/MWh delivered. In the EU, Citizen Energy Communities are legally entitled to access all electricity markets directly or through aggregation (Directive 2019/944, Art. 16(3)(a)); in the US, cooperative G&T arrangements and open-access distribution tariffs provide the equivalent path.
- **Least-cost dispatch.** The ENMS continuously selects the cheapest compliant source; the spread between the procurement band and the retail band is the Utility's entire economic engine.
- **Infrastructure-park-buildings sequencing.** Following the Open Doors community-development discipline (Appendix E), the Utility procures and energizes shared infrastructure first, brings a Communal Park online second as the visible, revenue-earning civic node, and only then connects individual buildings. This sequencing gives members a working demonstration of the network before they are asked to commit, and gives the Utility an early, non-residential revenue source.

5. Risks and Mitigations

Risk	Impact	Mitigation
Under-subscription (<1,000 meters)	Structural operating loss	Pre-commitment threshold before construction; anchor C&I loads
Margin compression (spot procurement >\$70/MWh)	Break-even recedes	Long-term local PPAs; storage arbitrage; retail floor ~\$150/MWh
Construction cost overrun on wires	Higher debt service	Microtrench pilots before full build; fixed-price EPC; grant funding
Regulatory classification as a regulated DSO/utility	Compliance cost	Organize under cooperative/energy-community statutes (Appendix C); closed-distribution-network exemptions (EU Art. 38(2))
85% member-income test failure (US 501(c)(12))	Loss of federal tax exemption	Cap non-member revenue below 15%; annual monitoring (Appendix C.1)
Technology maturity of Energy Routers	Deployment delay	Phase 1 sized to proven router classes; forerunner deployments (2001 Union St., Lund) as reference designs

6. Phase 1 Roadmap

- 1. Entity formation and membership drive** — incorporate under the applicable cooperative/energy-community statute; secure 1,500 meter pre-commitments.
- 2. Supply portfolio** — execute local PPAs and interconnection agreement for the grid DC interconnect.
- 3. Construction** — microtrench pilot (first mile), then full 10-mile build; router and meter installation in tranches of ~250 services.
- 4. Operations center** — stand up ENMS/EROS, billing, and settlement; hire the 5-FTE team in two waves.
- 5. Energization and settlement** — energize by tranche; first full fiscal year targets at least 15,600 MWh sold and positive net margin.

Appendix A — Supporting Documentation

A.1 Model assumptions

Parameter	Value	Basis
Average consumption	10–12 MWh/meter/yr (11 in Base)	Mixed residential + small commercial
Diversified peak demand	3.0 kW/meter, 50% coincidence at grid edge	Standard distribution planning values
Underground DC wires	\$350,000/mile	Low end of published underground ranges; microtrench method (see A.2)
Premise Energy Router	\$1,200/service	Planning estimate; router-native metering
Block Energy Router	\$60,000 per ~250 services	Planning estimate
Meters	\$300/meter	Low end of DOE AMI range (no separate comms network)
Grid interconnect	\$250/kW converter station	Planning estimate for MW-class AC/DC conversion
Operations center	\$250,000 capex; \$90,000/yr opex	ENMS, EP Server, billing, dispatch
Loaded labor cost	\$130,000/FTE average	Blended utility staffing
Network O&M	2% of network capital per year	Distribution industry planning norm; underground O&M runs 3–7× lower than overhead (see A.2)
Cost of capital	5%, 30-year amortization (CRF 0.0651)	Municipal revenue bond terms
G&A	\$80,000/yr	Insurance, audit, legal, regulatory

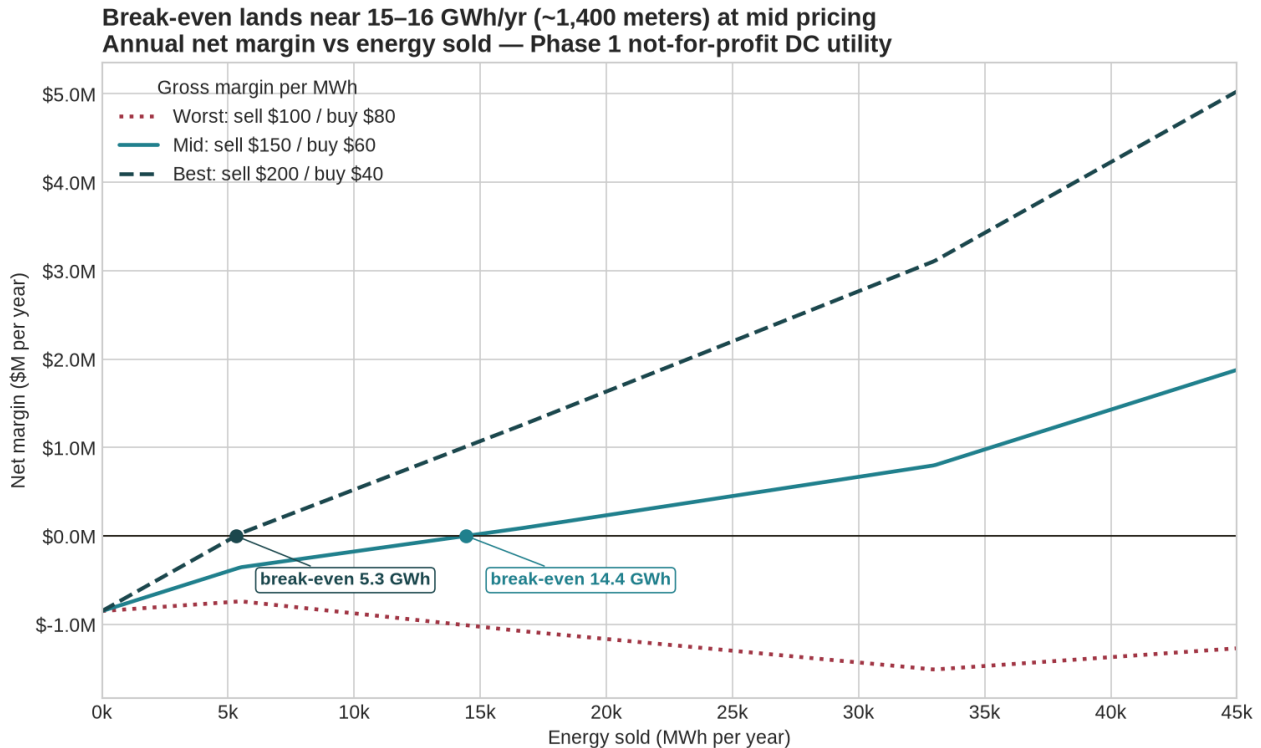
A.2 Benchmark evidence

- **Underground construction costs.** EEI: new underground distribution \$297,200/mile (rural) to \$4.5M/mile (urban); suburban \$528,000–\$2.3M/mile ([NAWPC/EEI](#)). Virginia SCC: new underground construction \$40,000–\$1.5M/mile ([Virginia General Assembly HD30](#)). DOE compilation: Wisconsin Public Service rural distribution as low as \$160,000/mile ([DOE Undergrounding Report, 2024](#)). Underground distribution maintenance runs 3–7× lower per mile than overhead ([Power & Cables / IEEE ICC](#)).
- **Metering costs.** DOE Smart Grid Investment Grant program: total AMI deployment \$130–\$1,895/meter, with only six of the projects above \$600 ([DOE AMI Summary Report, 2016](#)).
- **Micro-utility fixed costs.** Hydro 2000 Inc. (Ontario): 3 FTEs; 2025 test-year operating costs \$687,474; total OM&A ~\$500/customer/yr — the regulator's record explicitly notes "a minimum cost level is necessary to run a utility of any size" ([OEB Exhibit 4](#)).

- **Public power operating ratios.** American Public Power Association financial and operating ratio survey for distribution-utility benchmarking ([APPA ratios report](#)).

A.3 Break-even sensitivity

See the accompanying chart "Phase 1 Break-even Analysis": annual net margin versus energy sold for the three gross-margin cases, with fixed costs scaling from \$0.85M/yr (500 meters) to \$2.17M/yr (3,000 meters). Break-even points: 5.3 GWh/yr (best case), 14.4 GWh/yr (mid case, on the continuous fixed-cost curve); the worst case does not break even below 45 GWh/yr.



Fixed costs (personnel, ops center, O&M, G&A, 30-yr debt service at 5%) scale with network size: \$0.85M/yr at 500 meters to \$2.17M/yr at 3,000 meters. Avg 11 MWh/meter/yr, mixed residential and small commercial.

Figure A-1 — Phase 1 break-even analysis: annual net margin versus energy sold for the three gross-margin cases, with the fixed-cost floor scaling with meter count.

Appendix B — Sources

1. U.S. Department of Energy, "Advanced Metering Infrastructure and Customer Systems: Results from the SGIG Program" (2016) — https://www.energy.gov/sites/prod/files/2016/12/f34/AMI%20Summary%20Report_09-26-16.pdf
2. U.S. Department of Energy, "Undergrounding Transmission and Distribution Lines" (November 2024) — https://www.energy.gov/sites/default/files/2024-11/111524_Undergrounding_Transmission_and_Distribution_Lines.pdf
3. North American Wood Pole Council / Edison Electric Institute, "Undergrounding: Hidden Lines, Hidden Costs" — https://woodpoles.org/wp-content/uploads/TB_Undergrounding.pdf
4. Virginia General Assembly, House Document 30, "Placement of Utility Distribution Lines Underground" (2005) — <https://rga.lis.virginia.gov/Published/2005/HD30/PDF>
5. Ontario Energy Board, Hydro 2000 Inc. Cost of Service filing, Exhibit 4 — Operation Costs — <https://www.rds.oeb.ca/CMWebDrawer/Record/872250/File/document>
6. Power & Cables, "21st Century Costs of Underground Distribution" (IEEE Insulated Conductors Committee data) — <https://www.powerandcables.com/21st-century-costs-of-underground-distribution/>
7. American Public Power Association, "Financial and Operating Ratios of Public Power Utilities" (2024 edition) — <https://heberpower.com/wp-content/uploads/2024/02/2024-Financial-Operating-Ratios-for-Utilities.pdf>
8. Shaw Consultants for the DC Public Service Commission, "Study of the Feasibility and Reliability of Undergrounding Electric Distribution Lines in DC" (2010) — [https://oca.dc.gov/sites/default/files/dc/sites/oca/page_content/attachments/Study%20of%20the%20Feasibility%20&%20Reliability%20of%20Undergrounding%20Electric%20Distribution%20Lines%20in%20DC%20\(July%201,%202010\)%20-%20ShawConsultantsforPSC.pdf](https://oca.dc.gov/sites/default/files/dc/sites/oca/page_content/attachments/Study%20of%20the%20Feasibility%20&%20Reliability%20of%20Undergrounding%20Electric%20Distribution%20Lines%20in%20DC%20(July%201,%202010)%20-%20ShawConsultantsforPSC.pdf)
9. NetEdison — The Open Standard for Electricity — <http://netedison.com>
10. European Commission, "Setting up an energy community" — https://energy.ec.europa.eu/setting-energy-community_en
11. REScoop.eu, "Network" — <https://www.rescoop.eu/network>
12. Open Doors Management, "Communities Old and New: Visions from Open Doors" (English source version, internal document, August 2026) — see Appendix E

Appendix C — Legal References: Cooperative Utility Law

C.1 United States

Federal enabling and finance law

- **Rural Electrification Act of 1936, 7 U.S.C. §§ 901–950b.** The foundational statute creating federal lending for rural electric infrastructure, administered today by the USDA Rural Utilities Service. It remains the principal federal financing channel for member-owned distribution utilities. Full text with amendments: [7 U.S.C. 901 et seq.](#)
- **Internal Revenue Code §501(c)(12).** Federal income-tax exemption for benevolent life insurance associations, mutual ditch or irrigation companies, and "like organizations" including mutual or cooperative electric companies. Three tests apply: (1) organized and operated as a cooperative; (2) qualifying activities; (3) the **85% member-income test** — at least 85% of income each year must come from members for the purpose of meeting losses and expenses. The test is computed annually; exemption can be lost in any year the test fails and regained when it is met. IRS Exempt Organizations CPE text: [General Survey of I.R.C. 501\(c\)\(12\) Cooperatives](#); see also [IRS Publication 557](#) and [Rev. Rul. 2002-55](#) on income characterization under the 85% test.
- **Practical consequence for this plan:** non-member revenue (e.g., sales into wholesale markets, services to non-members through the DC interconnect) must be tracked and capped below 15% of gross income, or the Utility should plan to operate as a taxable cooperative under Subchapter T in years the test fails (see NRECA practice note, ["Failing the 85-15 Test"](#)).

State incorporation law (representative examples)

- **Texas Utilities Code, Chapter 161 — Electric Cooperative Corporations:** a complete model of a dedicated state electric-cooperative act covering formation (ten or more natural persons), non-profit operation, member governance, and service powers. [Tex. Util. Code ch. 161](#)
- **Pennsylvania Title 15 (Corporations and Unincorporated Associations):** cooperative corporation provisions within a general corporations code, the alternative pattern where no standalone electric cooperative act exists. [15 Pa.C.S.](#)
- Most US states have an electric cooperative act of one of these two patterns; formation counsel should confirm the target state's act, any exemption from public-utility-commission rate regulation (common for member-regulated cooperatives), and territorial/franchise rules for new distribution facilities.

C.2 European Union

Energy community law (the Clean Energy Package)

- **Directive (EU) 2019/944 (Internal Electricity Market Directive), Article 16 — Citizen Energy Communities (CECs).** Member states must provide an enabling regulatory framework ensuring open and voluntary participation, free exit, retention of consumer rights, DSO cooperation with fair compensation, and non-discriminatory, cost-reflective network charges. Member states **may** grant CECs the right to **own, establish, purchase or lease distribution networks and autonomously**

manage them (Art. 16(2)(b), 16(4)) — the direct legal foundation for a community-owned DC wires network — and may apply the closed-network exemptions of Art. 38(2). CECs must be able to access all electricity markets directly or through aggregation and are balance-responsible parties (Art. 16(3)). Definition at Art. 2(11). [Directive \(EU\) 2019/944, Art. 16](#); official text: [EUR-Lex CELEX 32019L0944](#)

- **Directive (EU) 2018/2001 (RED II), Article 22 — Renewable Energy Communities (RECs).** RECs are entitled to produce, consume, store and **sell** renewable energy including through PPAs; to **share energy within the community** from community-owned production; and to access all suitable energy markets. Member states must provide an enabling framework removing unjustified regulatory and administrative barriers (Art. 22(4)) and must account for REC specificities in support-scheme design (Art. 22(7)). Definition at Art. 2(16) — effective control by members located in proximity to the projects, with primary purpose being environmental, economic or social community benefit rather than financial profit. [Directive \(EU\) 2018/2001, Art. 22](#)
- **Energy sharing right.** Article 15a of Directive 2019/944 (as amended by the 2024 electricity market design reform) establishes a right to energy sharing for households, SMEs and public bodies; the Commission's 2026 recommendation urges member states to let CECs manage closed distribution grids and to enable cross-border communities ([Council document C\(2026\) 2850](#)).
- **Enforcement note.** Where member states have not transposed the enabling frameworks, several Article 16/22 rights are sufficiently clear to support legal action; see ClientEarth, "[Enforcing the rights of energy communities](#)".

Cooperative corporate form

- **Council Regulation (EC) No 1435/2003 — Statute for a European Cooperative Society (SCE).** Permits formation of a cooperative with legal personality operating across member states; minimum subscribed capital €30,000; variable capital and membership; investor (non-user) members permitted with limited voting rights; registered-office member-state law governs residual matters. Applicable since 18 August 2006. Complemented by Directive 2003/72/EC on employee involvement. [Regulation 1435/2003 \(consolidated\)](#); summary: [EUR-Lex SCE summary](#)
- **Practical consequence for this plan:** an EU deployment would typically pair a national cooperative or SCE corporate form with registration as a CEC (for the wires and supply activities) and/or REC (for community renewable generation), giving the Utility both the governance structure and the sector-specific rights above. National transposition varies significantly by member state (e.g., Italy's Legislative Decree 199/2021 for RED II) and must be confirmed for the target jurisdiction.

C.3 Comparative summary

Question	United States	European Union
Enabling form	Electric cooperative under state co-op act	CEC (2019/944 Art. 16) / REC (2018/2001 Art. 22); national co-op or SCE form
Right to own local wires	Yes, under state law; franchise/territory rules apply	Member-state option under Art. 16(2)(b), 16(4); closed-network exemption Art. 38(2)

Question	United States	European Union
Tax treatment	Federal exemption via IRC §501(c)(12) (85% member-income test)	National tax law; SCE taxed as a normal multinational cooperative
Market access	Wholesale access via co-op G&T structures / open access	Guaranteed access to all markets, directly or via aggregation (Art. 16(3), Art. 22(2)(c))
Concessional finance	USDA Rural Utilities Service (Rural Electrification Act)	Enabling frameworks + adjusted support schemes (Art. 22(4), 22(7))
Energy sharing among members	Utility function of the cooperative	Express right (Art. 16(3)(e); Art. 22(2)(b); Art. 15a as amended)

Appendix D — Network Topology Reference Diagram

The Phase 1 network is built from two layers: **local DC rings** that serve member buildings, and a **wide-area DC mesh** that interconnects the rings and reaches the greater distribution grid. The reference diagram (Figure D-1 below; a clean high-resolution version accompanies this plan) shows a four-ring build corresponding roughly to the Base scenario in Section 3.2. Callout numbers below match the annotated diagram.

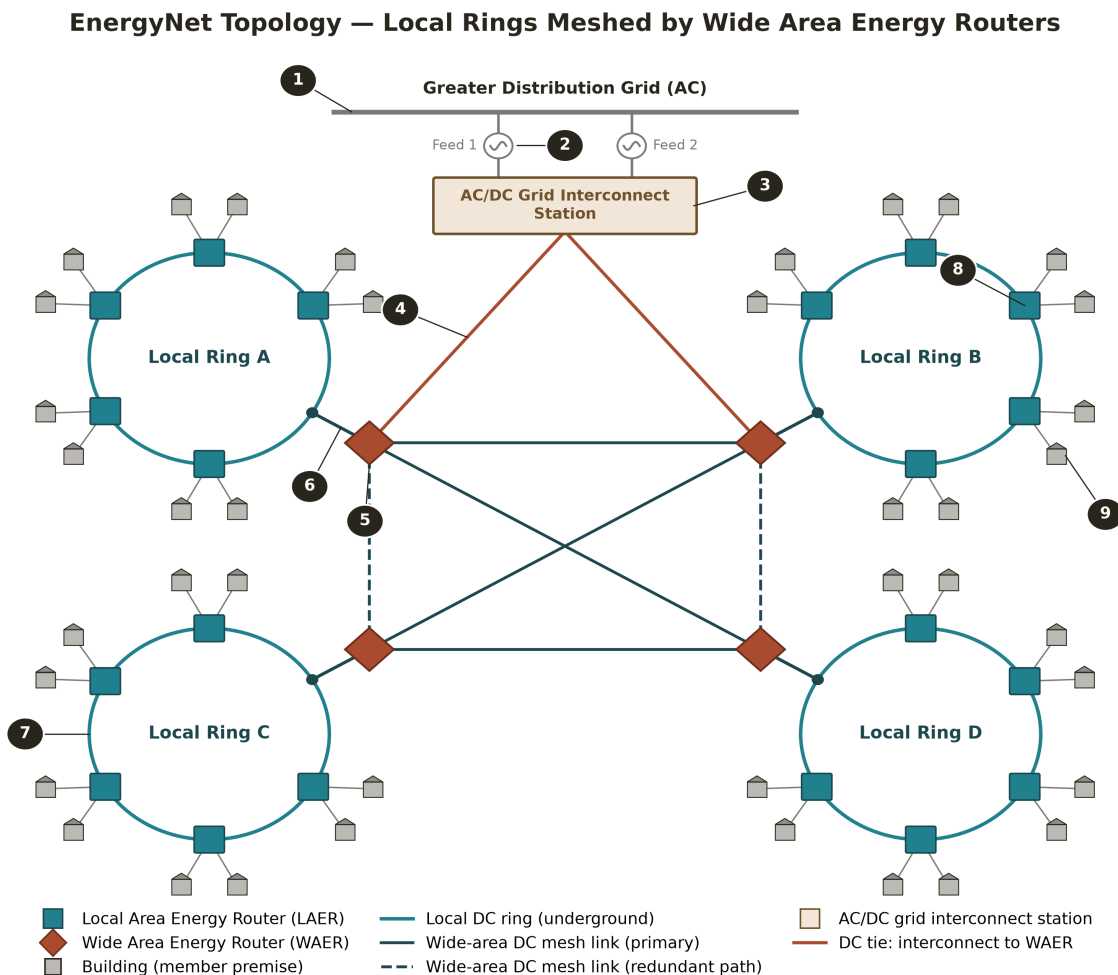


Figure D-1 — EnergyNet reference topology with numbered callouts: local DC rings meshed by Wide Area Energy Routers, dual utility feeds, and redundant DC grid ties.

Diagram callouts

#	Element	Description
1	Greater distribution grid (AC)	The incumbent utility's AC distribution system. Phase 1 procures remote energy here at \$40–\$80/MWh (Section 3.1) and can export member surplus when market conditions warrant.

#	Element	Description
2	Dual redundant utility feeds	Two independent AC service feeds (Feed 1, Feed 2) from the greater grid into the interconnect station. Loss of either feed leaves full import/export capability intact — utility-grade N-1 redundancy at the point of common coupling.
3	AC/DC grid interconnect station	Bidirectional AC/DC conversion plant at the point of common coupling. Galvanically separates the community DC system from the AC grid; sized in the capital budget at \$250/kW of coincident interconnect capacity (Section 3.3).
4	DC ties to the mesh	Two DC ties from the interconnect station terminate on two different WAERs. Grid supply enters the mesh at two points, so no single tie or WAER failure severs access to remote procurement.
5	Wide Area Energy Router (WAER)	Rust diamonds. WAERs run the EnergyNet Protocol to route energy between rings and to/from the grid interconnect — settlement, congestion management, and path selection across the wide-area layer.
6	WAER interconnect stub	Each WAER is offset from its ring on a short DC stub tapped at a junction point on the ring. The stub separates wide-area routing assets from the local serving layer, physically and operationally.
7	Local DC ring	Underground bidirectional DC loop (microtrenched LVDC, ± 750 VDC class, \$350k/mile — Section 3.3). Ring topology means every LAER is reachable in two directions; a single cable fault degrades no member's service.
8	Local Area Energy Router (LAER)	Teal squares. LAERs serve member premises from the ring: metering, premise-level routing, DER integration, and enforcement of EnergyNet Protocol transactions at the service edge.
9	Building (member premise)	Member buildings connect to their LAER via premise service laterals. Each service is metered (\$300/meter) and equipped with a premise router (\$1,200) per the capital budget.

Redundancy summary

The topology delivers layered N-1 redundancy end to end:

- **Utility layer** — two independent AC feeds (2) into the interconnect station.
- **Grid entry** — two DC ties (4) landing on two separate WAERs.
- **Wide area** — full WAER mesh with primary (solid) and redundant (dashed) paths; any single mesh link can fail without isolating a ring.
- **Local layer** — bidirectional rings (7) tolerate any single cable segment fault.

No single failure — feed, tie, mesh link, WAER, or ring segment — interrupts service to a member building or removes the cooperative's ability to procure remote energy.

This plan is a working draft for member, partner, and counsel review. Legal references are provided for orientation and are not legal advice; formation requires counsel admitted in the target jurisdiction.

Appendix E — Communal Parks: Community Utility Anchor Elements

Source: Open Doors Management, "Communities Old and New: Visions from Open Doors" (English source version, August 2026), provided by the user as the approved output of a dedicated development thread. Summarized and adapted below for its application to the NetEdison Community Utility.

The reference illustration below (communal_park_reference.jpg) shows one way a Communal Park anchor node can be built: dual-axis solar arrays provide both generation and shade, a central pool doubles as a recreation amenity and a water-purification asset, and the surrounding ring hosts mobility charging, a concession pavilion, and community gathering space.

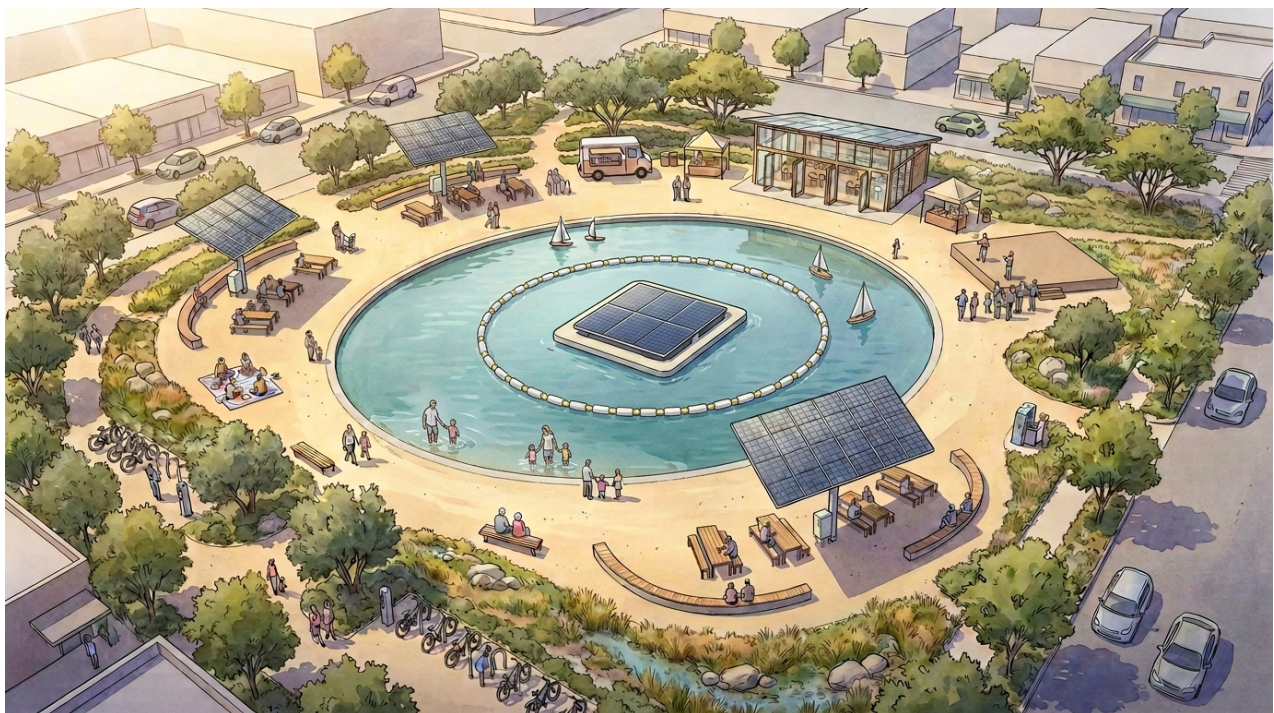


Figure E-1 — Illustrative Communal Park reference design: dual-axis solar canopies for generation and shade, a central pool for recreation and water purification, mobility charging, concession space, and community gathering areas.

E.1 Concept and rationale

Open Doors organizes community development around a fixed sequence: **infrastructure first, parks second, buildings last**. Shared water, thermal, power, DC routing, fiber, mobility, and waste systems are established before individual parcels are built out. The park is the second investment — a public landscape and civic utility room that makes the shared infrastructure visible, usable, and trusted before most buildings are occupied or renovated. Buildings connect last, as voluntary participants in a system whose capacity, rules, and civic purpose already exist.

This order applies to both **old communities**, where renewal begins wherever a street is opened or a public site improved, and **new communities**, where civic systems are established before land is

divided into isolated parcels. In both cases, the Communal Park is the point at which residents first experience the benefit of the underlying network.

E.2 The Communal Park as a NetEdison anchor node

A Communal Park is simultaneously a public amenity and a functioning node of the NetEdison network, giving the Utility a concrete anchor for generation, load, and revenue ahead of full residential buildout (see Section 2.2 and Finding 4 in Section 3.6):

Function	Park elements	NetEdison relevance
Generation	Local energy behind the park's Energy Router; a water body for thermal exchange; a PVC shallow geothermal network	Feeds the local supply band at \$40–\$60/MWh (Section 4), lowering the Utility's blended procurement cost
Load	Climate-controlled public room, water dispensing and treatment, vehicle and bicycle charging, fiber, vacuum waste collection	A firm, meterable load the Utility can energize and bill before residential connections are complete
Revenue	Electricity and water services, mobility charging, concession rent, public programming	Direct operating revenue plus non-rate income (concession rent, programming) that a rate-only residential build does not have access to
Civic function	Shade, seating, play, gardens, food, events, a flexible interior room	Makes the underground DC network and its benefits legible to members before they are asked to pre-commit (Section 3.6, Finding 2)

E.3 Sequencing across build contexts

The Communal Park model maps directly onto NetEdison's two deployment contexts:

- **New-build / greenfield.** The park is established as the physical and social center before homes, workspaces, and shops are built, mirroring the Lean-to-Base build scenario in Section 3.2. It can be timed to energize alongside the first tranche of routers and meters, giving early members and financiers a visible, revenue-earning asset while the rest of the pre-commitment drive is underway.
- **Existing-park renovation / old-community retrofit.** An existing park or public site becomes the first NetEdison node when a street is opened, a pipe replaced, or a public building renovated — the same opportunistic renewal logic Open Doors applies to aging infrastructure generally. This is the lower-capital path into a Communal Park anchor, since it reuses public land and can piggyback on already-planned municipal works.

E.4 Governance and ownership

Open Doors does not require a single ownership model for a Communal Park; instead it assigns four roles, which map onto the Utility's existing cooperative/energy-community structure (Appendix C):

- **Public authority** — protects land, rights of way, public access, and standards; parallels the municipal or public-utility counterpart in a cooperative or Citizen/Renewable Energy Community

structure.

- **Community or cooperative** — organizes participation, shared ownership, local capital, and community benefit; this is the NetEdison Community Utility itself, or a member cooperative sponsoring the park.
- **Operating platform and service partners** — integrate systems, maintain assets, and meet technical and regulatory obligations; for NetEdison this is the Utility's operations center (Section 3.4), running EROS/ENMS for the park's Energy Router the same way it runs the rest of the network.
- **Residents, businesses, and institutions** — use the systems and participate in governance; for the Utility these are members and, for the park specifically, concessionaires and programming partners.

The European Commission reports that EU citizens and communities already produce, share, sell, and consume renewable energy collectively through energy communities ([European Commission](#)). REScoop.eu describes a network of 2,500 such energy communities and 2 million citizens active in the energy transition ([REScoop.eu](#)) — precedent that a park-anchored, community-owned generation and service model is both legally supported and already operating at scale in the EU (see Appendix C.2 for the applicable Citizen/Renewable Energy Community provisions).

E.5 Capital stack for a Communal Park

Open Doors' capital plan for community development is deliberately layered, and each layer has a direct counterpart in the Utility's own financing approach (Section 3.7):

- **Revenue bonds or similar revenue-backed finance** for long-lived, metered park infrastructure (its Energy Router, geothermal loop, water systems) — the same instrument financing the rest of the Base-case network at ~6.5%/year debt service.
- **Property-tax, assessment, or value-capture mechanisms** for the public-benefit portion of the park (shade, accessible paths, flood resilience) that does not generate metered revenue directly.
- **Concession rent** for recurring income from food, local goods, and events, protected by contracts that preserve public access and design quality.
- **Direct service revenue** — electricity, water, charging, and connectivity — billed exactly as any other NetEdison connection is billed, at the same \$100–\$200/MWh retail band (Section 3.1).

The operating rule carries over unchanged: park revenue first funds safe operation, maintenance, and any debt service, with surplus directed to expanded programming or additional community benefit only afterward — consistent with the not-for-profit operating discipline described in Section 1.2 and Appendix C.

E.6 Recommended next step

Because a Communal Park changes both the load-and-revenue profile and the capital sequencing of a Phase 1 build, it is best modeled as a **named variant of the Base case** (Section 3.2) rather than folded into the existing Lean/Base/Growth table. A follow-on financial model — adding a park's generation, load, and concession revenue as a distinct line alongside the existing meter-based scenarios — would let the Utility quantify how much of the anchor-load requirement in Finding 2 (Section 3.6) a given park design actually displaces.