PLATFORM GENERATION

FortisBC Energy Exchange

A Conceptual Platform Blueprint From Linear Utility to Participatory Energy Ecosystem

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A Conceptual Platform Blueprint
From Linear Utility to Participatory Energy Ecosystem

FortisBC platform whitepaper series — paper 1 of 3

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Executive Summary

FortisBC is long fulfilling a classic mission: move energy safely and reliably to British Columbians through regulated pipes and wires. Under this linear model, energy largely travels in one direction from central or upstream sources to end-users, and data are collected for specific purposes — billing, safety, compliance — then stored in programme silos. This has delivered stability. Yet five converging forces now press for a gradual evolution toward a platform posture.

First, decentralised assets — rooftop solar, behind-the-meter batteries, electric vehicle chargers, demand-flexible HVAC systems, farm and landfill renewable natural gas (RNG) — are multiplying. Managing each one as a bespoke exception drives up integration time and cost. Second, the volume and granularity of operational data are exploding: advanced meters, sensors, inverters, gas quality analysers and edge controllers produce continuous telemetry whose potential system value remains only partly captured. Third, decarbonisation policies (CleanBC targets, low-carbon gas mandates, electrification goals) demand faster, verifiable progress on emissions intensity and flexibility utilisation. Fourth, population and electrification growth raise the capital planning challenge: how to meet emerging peaks and expansion needs without overbuilding long-lived assets that might become under-utilised. Fifth, the risk landscape is shifting — climate volatility, cyber threats, the prospect of stranded gas or electric infrastructure, and public expectations for transparency all grow simultaneously.

A platform approach — here termed the proposed **"FortisBC Energy Exchange"** — does not abandon regulation or core reliability mandates. Instead, it layers an orchestrated interaction space atop existing infrastructure. In this space, the same actors who *consume* energy (homes, SMEs, municipalities) can also *provide* value: exporting surplus solar kilowatt-hours, injecting certified RNG gigajoules, discharging stored energy, or offering flexible demand reductions. Specialist *partners* — fintech, regtech, device OEMs, analytics and controls firms — supply modules that make measuring, validating and settling these contributions repeatable. FortisBC retains the owner-operator role, curating safe participation, assuring physical and cyber security, and embedding a clear "data-value governance" framework that answers: *who may see which data, for what purposes, under what quality and consent conditions, and how shared insights translate into cost savings, risk reduction or new service value?*

Financial rationale strengthens the strategic case. Standardising DER and RNG onboarding can defer or right-size capital projects by substituting targeted flexibility and distributed injections where feasible. Higher asset utilisation raises productivity per invested dollar. Unified data governance lowers the marginal cost of analytics, regulatory reporting and settlement. Clear, verifiable emissions and flexibility metrics may enhance ESG standing, contributing, subject to regulatory approval, to improved financing terms for green or sustainability-linked instruments. At the same time, diversified participation pathways reduce stranded asset, peak capacity and reputational risks by distributing system response capability.

This series therefore unfolds in three steps. **Paper 1** (this document's focus) presents an accessible Platform Business Model Canvas (PBMC) adapted for FortisBC and augmented with embedded data-value governance elements. It contrasts today's linear pattern with a multi-directional exchange model and establishes common language for non-specialists. **Paper 2** will apply the extended PBMC specifically to electricity: solar prosumers, batteries, EV charging and demand flexibility. **Paper 3** will address distributed RNG and low-carbon gas: production, quality tracking, certification, blending constraints and potential future peer trading constructs. Together they form a conceptual bridge from current operations to a measured, regulator-aligned platform evolution.

1. Introduction – The Current FortisBC Ecosystem

Think of today's FortisBC ecosystem as a *hub-and-spoke system*. FortisBC plans and operates networks (electric and gas), procures or enables bulk energy supply, and delivers it safely to end-users — households, small and medium enterprises (SMEs), large industrial sites, and municipalities. Customers are primarily *consumers*: they receive energy, read (or are auto-read by) meters, and pay bills. A limited subset installs rooftop solar, sells excess under net-metering rules, or supplies RNG under structured agreements. These exceptions are handled through special programmes rather than through a general "market space" open to all participants.

Information flows mostly one way too. Meter data travel from premise to utility systems. FortisBC uses them for billing, planning, and regulatory reporting. Customers receive monthly summaries or online dashboards, but they rarely receive *real-time* signals (e.g. local congestion or carbon intensity) that would let them optimise behaviour. Partners — such as equipment manufacturers, finance providers, or software firms — typically interact via bilateral contracts, pilots, or integration projects. Each new collaboration often needs its own legal agreement and technical customisation.

Governance rests on a layered framework: the British Columbia Utilities Commission (BCUC) sets or approves rates, service quality standards, and major capital investments; safety and environmental regulations define compliance boundaries; FortisBC's internal policies ensure operational reliability. Customers have limited influence on *how* value is created beyond participating in consultations or rate hearings.

Economically, value creation is linear: capital investment in infrastructure earns regulated returns; energy volumes drive revenue recovery under approved tariffs; programme incentives encourage efficiency or renewable uptake. Innovation cycles are bound to regulatory filings and internal project timelines. In short, it is a reliable, asset-centric, risk-managed model — effective for the twentieth century paradigm of centralised supply, but structurally limited in unlocking the distributed, data-rich, low-carbon system emerging today.

This ecosystem has created stable service and allowed methodical infrastructure planning. However, the emerging diversity and velocity of edge resources strain bespoke approaches: queue management lengthens, coordination overhead rises, and opportunities to enlist flexible capacity or low-carbon supply in a timely, scalable manner can be delayed. In short, the present model excels at delivering commodity energy reliably; it is less optimised for orchestrating countless small, dynamic transactions that characterise a more distributed, low-carbon system.

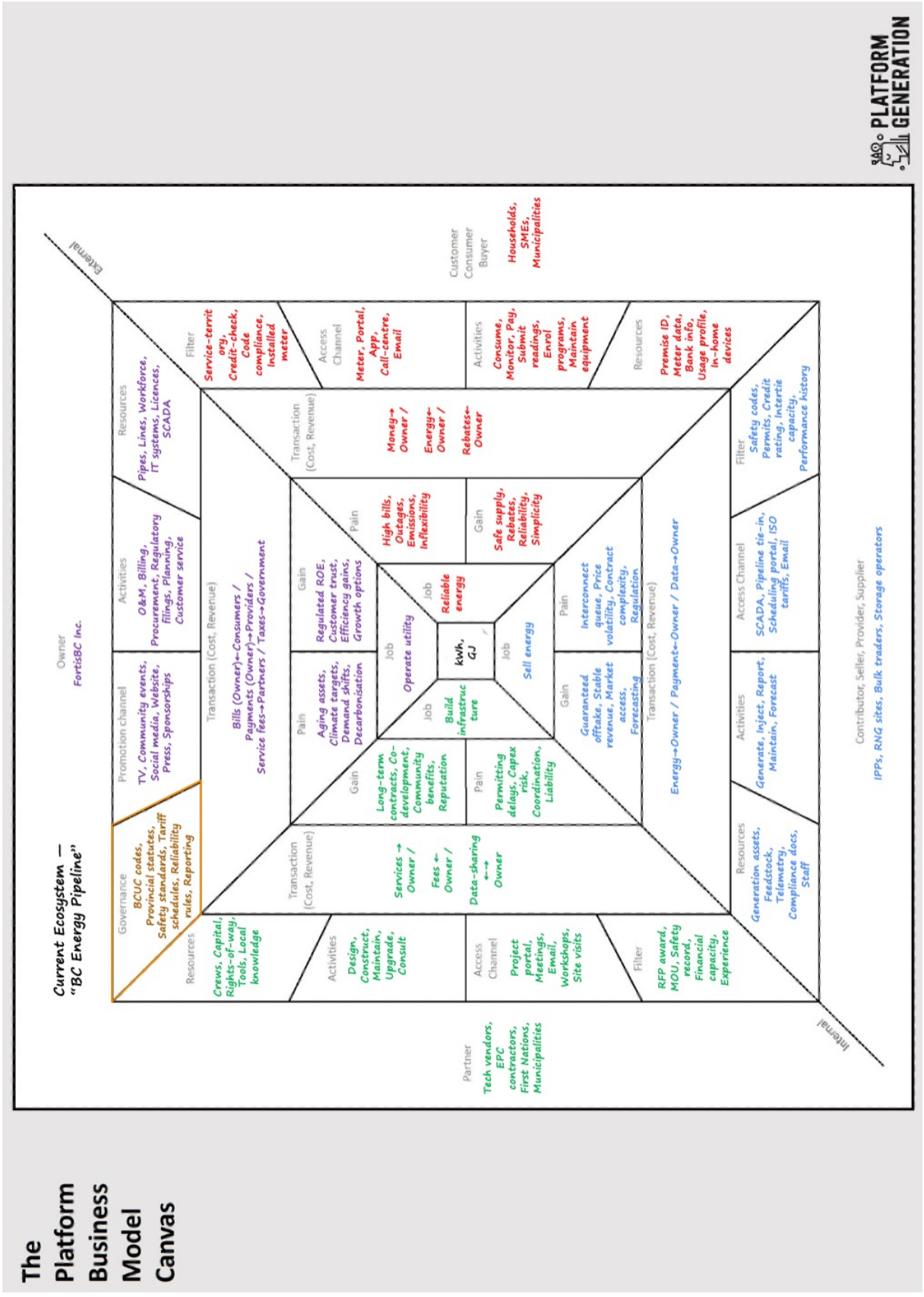

Figure 1: the current ecosystem of FortisBC illustrated by the platform business model canvas

2. Motivation – Why Consider a Platform Transition?

Five converging forces drive the need to re-imagine this linear setup.

1. **Decentralisation.** Rooftop solar, community solar gardens, behind-the-meter batteries, smart thermostats, electric vehicles (EVs), and agricultural or landfill RNG digesters move energy production and flexible demand closer to end-users. Each device is a *potential micro-service*: it can inject energy, absorb it, or shift its timing. A system that treats these resources as exceptions risks under-utilising them.

2. **Data Proliferation.** Advanced meters, sensors, inverters, EV chargers, and gas quality monitors generate granular time-stamped data. Properly governed, these data improve forecasting, congestion management, carbon accounting, and customer choice. Poorly governed, they fragment, duplicate, or raise privacy and security concerns.

3. **Decarbonisation and Policy Ambition.** Meeting CleanBC targets and broader net-zero trajectories requires both *electrification* (getting more services off fossil fuels) and *green molecules* (RNG, potentially hydrogen blends). These pathways depend on mobilising capital and innovation beyond the utility boundary — engaging customers, technology firms, financiers, and communities as active contributors.

4. **Capital Efficiency and Growth Management:** Population growth and electrification inflate peak projections. A platform that treats flexibility and distributed supply as first-class planning inputs (not as afterthoughts or exceptions) can reduce or defer certain traditional investments, smoothing rate impacts and lowering stranded asset risk if utilisation forecasts later moderate due to efficiency or behavioural shifts.

5. **Risk And Resilience Reduction:** Distributed capacity and governed data transparency improve situational awareness for extreme weather, wildfire smoke impacts on solar generation, or sudden gas pressure events; modular, API-based integration reduces shadow IT and cyber exposure; diversified revenue logic (e.g. orchestrated flexibility services within regulatory parameters) can strengthen earnings stability if volumetric margins evolve.

Financially, even partial deferral of a major substation reinforcement or pipeline capacity upgrade via aggregated flexibility and targeted distributed supply can outweigh early platform enablement costs. Enhanced data quality and automated settlement shrink manual reconciliation and working capital lag. Transparent carbon intensity and flexibility metrics support regulator engagement and potential performance-based incentives. Thus, the transition is not a leap away from regulated logic; it is an efficiency, resilience and credibility upgrade aligned with core mandates.

A *platform* approach directly addresses these forces: rather than doing everything internally, FortisBC would curate shared rules, interfaces (APIs), and assurance mechanisms that let many participants create and exchange value. The utility still ensures safety, reliability, and fairness — but does so by orchestrating interactions rather than by owning every process end-to-end.

Why now? Timing matters. Introduce a platform too early and it idles with low participation. Introduce it too late and value migrates to external technology aggregators who may not align with public accountability. A deliberate, phased platform design allows regulators to supervise innovation (e.g. through a sandbox), lets customers benefit from market signals, and positions FortisBC as a *trusted integrator* of both electrons and molecules. Crucially, embedding *data-value governance* from the outset turns raw data into trustworthy, auditable, privacy-respecting shared assets — avoiding retrofits that often stall similar transitions elsewhere.

3. The Future Ecosystem – FortisBC Energy Exchange

In the proposed future, FortisBC operates the **FortisBC Energy Exchange**: a digital and operational layer that sits on top of the physical grid and gas network. On this exchange:

Consumers (homes, SMEs, municipalities) still purchase energy for their needs, but they also receive *dynamic insights*: local carbon intensity, indicative congestion, or incentives for shifting use.

Providers include any participant able to *export* or *flex*: rooftop solar owners, community solar cooperatives, RNG digesters, agricultural waste processors, battery operators, EV fleets, building automation systems, and aggregated flexible loads (e.g. HVAC clusters). A household might be both consumer and provider ("prosumer") within the same day.

Partners (fintech, regtech, device manufacturers, installers, insurers, auditors, data analytics firms) supply specialised services: secure payments, emissions assurance, device attestation (proof a device is genuine and safe), financing packages, or data visualisation.

FortisBC (Owner) orchestrates. It does not abandon its infrastructure role; instead, it *layers* a governed marketplace and data environment on top of the wires and pipes. It defines open technical interfaces, certifies participants, monitors system integrity, settles transactions, and ensures equitable access consistent with regulatory obligations.

The *core value unit* becomes a **verified energy token**: a digitally represented kilowatt-hour (kWh) or gigajoule (GJ) tagged with time, location, and a transparent carbon intensity factor (for the gas stream: methane content, pressure, and carbon equivalence; for electricity: marginal or locational carbon signal). A *secondary value unit* is the **data service packet**: an aggregated, anonymized dataset (e.g. neighbourhood load shape, RNG quality profile) available under clear licensing and privacy controls.

Transactions expand beyond "utility → customer billing" to include: prosumer export settlements, flexibility capacity payments, partner service fees, carbon attribute purchases (e.g. localised low-carbon energy bundles), and performance incentives (e.g. reliability support during peak). Crucially, every interaction is *data-backed*: measurement, verification, provenance, and audit trails reduce disputes.

Governance is multi-layered: statutory (BCUC oversight), platform rules (smart contracts and policies), data rights (who owns, who can license, how long), and cybersecurity (role-based access, encryption, anomaly detection). The aim is *participatory reliability*: more actors acting, but all within transparent, enforceable boundaries.

What distinguishes this platform framing from today's linear pipeline is *standardisation and repeatability*. Onboarding becomes a structured sequence: eligibility (technical & governance), device authentication, data stream validation, operational dispatch participation (if applicable), and settlement. A unified data layer (with role-based access) powers real-time visibility dashboards for system operations, forecasting models for planning, carbon intensity reporting for regulators, and transparent history for participants. Governance is explicit: data ownership, usage consent, retention periods, quality thresholds, anonymization rules and dispute processes are codified.

The platform model does **not** require instantaneous end-state transformation. It lends itself to incremental pilot waves: start with a solar + flexibility feeder zone, extend to a cluster of RNG injections, then unify settlement logic. At each phase, measured KPIs (e.g. interconnection cycle time, data completeness, flexibility delivered at peak, avoided capex projections, emissions intensity) provide evidence for scaling decisions and regulatory dialogues.

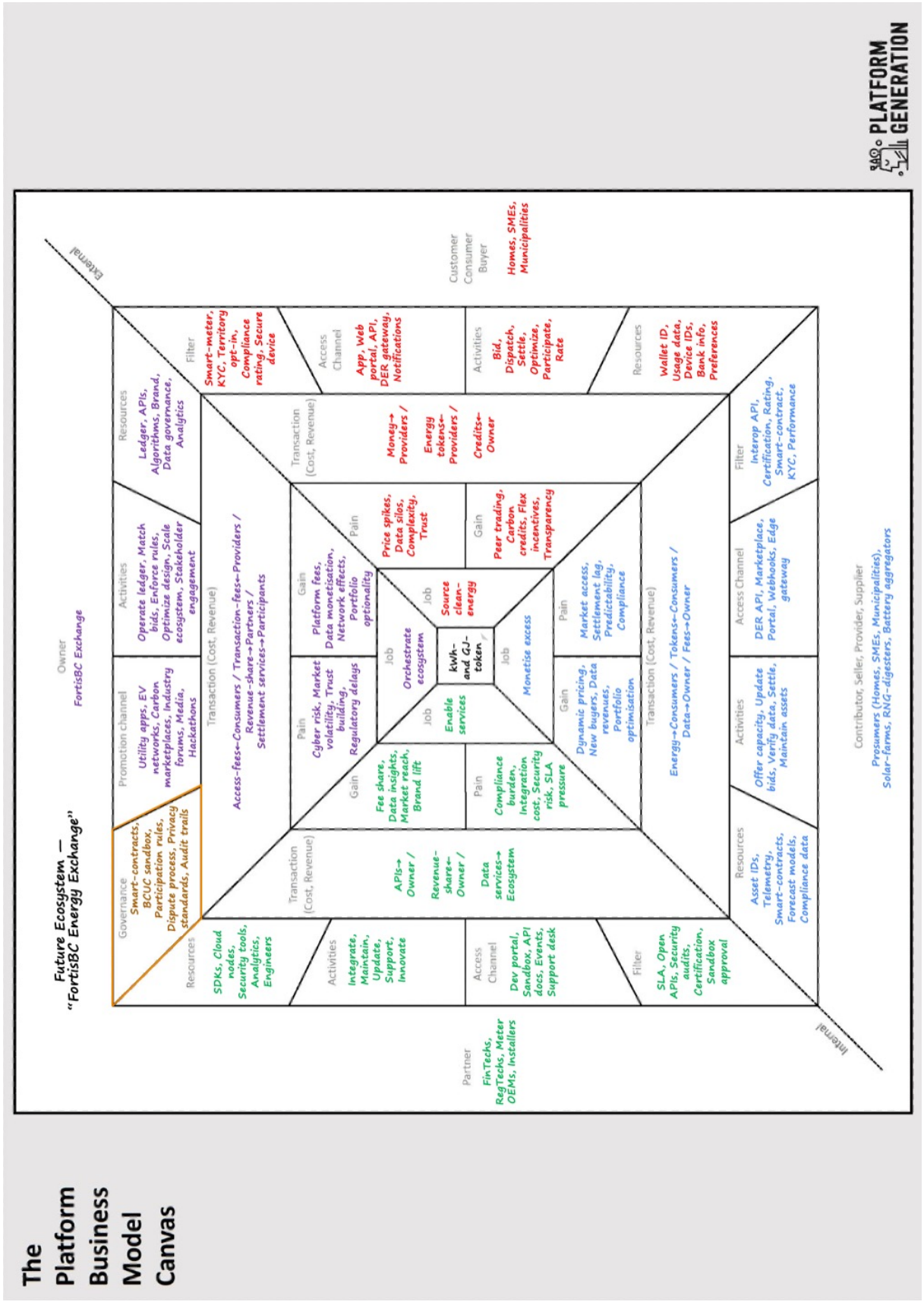

Figure 2: Introducing the Future Platform Model of FortisBC as an Energy Exchange Platform

4. Key Transformation Shifts – From Linear Utility to Platform Orchestrator

4.1 Key Transformation Shifts

1. **Energy Flow:** From one-directional delivery to managed multi-directional exchanges (imports *and* exports visible and dispatchable).

2. **Data Handling**: From siloed operational and billing stores to a governed shared layer where authorised actors access standardised feeds.

3. **Integration Cost**: From bespoke engineering per project to a catalogue of pre-certified device types and API-based onboarding workflows.

4. **Capital Planning**: From building mainly for forecasted peaks to first procuring aggregated flexibility and distributed injections, then targeting residual infrastructure gaps.

5. **Customer Role:** From passive bill recipient to active participant with visibility into value of flexibility, carbon attributes and export revenues or credits.

6. **Risk Posture**: From largely reactive contingency management to predictive analytics leveraging richer telemetry (e.g. early voltage anomalies, pipeline pressure deviations, solar ramp forecasts tied to wildfire smoke modelling).

What these shifts mean in practice.

Together, these changes turn FortisBC from a one-way delivery company into an orchestrator of many small, useful exchanges. Energy no longer only flows *to* customers; it can also flow *from* them when they have surplus power or flexible demand that helps the local grid. Data stops living in separate bins and becomes a governed, shared resource—so the right people (and systems) see the right, standardised feeds at the right time. Instead of re-engineering every new device or project from scratch, a catalogue of pre-certified hardware and plug-and-play APIs lowers integration time and cost. On the planning side, FortisBC can first "buy" flexibility and distributed injections to manage peaks, then build only what's still needed. Customers move from passive bill-payers to active participants who can see—and get paid for—the value they provide. And risk management shifts from reacting to problems to predicting them, using richer, real-time telemetry to spot issues before they become outages or safety events.

4.2 Current vs. Future Model – Side-by-Side PBMC elements

The PBMC is a structured way to describe how different actors create and exchange value. Putting a selection of PBMC elements side by side depicts how the transformation shifts affect the current ecosystem as it transforms into a future platform.

PBMC Element	A. Current Ecosystem ("Linear Utility")	B. Future Platform ("Energy Exchange")
Consumers	Households, SMEs, municipalities – primarily passive	Same groups, but active: can respond, shift, co-create
Providers (Contributors)	Limited: select net-metered solar, RNG project developers	Broad: solar owners, RNG digesters, batteries, EV fleets, flex aggregators
Partners	Equipment vendors, consultants, financiers (bilateral deals)	Fintech, regtech, device OEMs, installers, analytics & assurance partners (plug-in via APIs)
Owner	FortisBC operates assets & internal IT	FortisBC operates assets *and* orchestrates multi-party interactions
Jobs (Simplified)	Deliver energy safely; pay bills reliably	Exchange energy & flexibility; optimise cost/carbon; monetize assets; ensure reliability
Pains (Typical)	Limited choice; slow programme onboarding; opaque data; integration friction	Potential complexity; need trust in measurement; data privacy; cyber risk
Gains (Desired)	Reliable supply; predictable bills	New revenue from exports/flex; carbon transparency; faster innovation; tailored services
Filters (Access Rules)	Tariff eligibility, interconnection studies, vetting for pilots	Tiered certification (KYC*, device safety, performance rating, privacy compliance)
Transactions	Regulated volumetric billing; programme incentives	Access fees, per-transaction fees, export settlements, capacity payments, partner revenue shares
Channels	Customer portals, call centres, paper bills	Web/app portal, device gateway, open APIs, developer portal
Key Resources	Physical grid & gas assets, SCADA, billing systems	Same + token/ledger layer, data catalog, real-time analytics, trust & brand capital
Key Activities	Plan, build, maintain, meter, bill, comply	Orchestrate interactions, manage data marketplace, certify devices/participants, run matching & settlement engines
Governance	Regulatory compliance, internal policies	Layered: regulation + platform rules + data rights + smart contracts + cyber standards
Core Value Unit	Delivered kWh / GJ (undifferentiated)	Tokenised kWh / GJ with carbon metadata + data service packets

5. How the Platform Creates and Protects Value

5.1 Value Co-Creation and Dynamic Business Models

Traditional business models often depict value as a linear output, produced by a single firm and delivered to a passive customer. However, contemporary understanding, particularly within the framework of service-dominant logic, posits that value is inherently co-created. In this paradigm, multiple actors — including customers, partners, technological devices, and platform orchestrators — interact within a dynamic system, where value emerges through shared actions, real-time decisions, and collaborative participation.

For FortisBC, a leading energy utility, this co-creation model is central to its strategic transition from a conventional linear utility to a participatory, decentralized energy platform. This transformation is driven by several converging forces: the proliferation of distributed energy resources (DERs), stringent decarbonization mandates, the rapid advancement of digital infrastructure, and increasing customer expectations for transparency and active participation in their energy consumption and production.

Moreover, in modern platform-based business models, particularly within the energy sector, value is no longer restricted to monetary outcomes. Organizations like FortisBC increasingly recognize the significance of environmental and social dimensions in value creation and capture. These non-financial benefits include reductions in greenhouse gas emissions, improvements in energy equity and access, and enhanced community resilience. Such outcomes are essential not only for fulfilling regulatory and policy mandates but also for building long-term stakeholder trust and legitimacy.

To systematically navigate this complexity, the FortisBC Energy Exchange is conceptualized within four interlinked business value domains. These domains provide a comprehensive framework for understanding how value is generated, exchanged, and sustained across a dynamic energy ecosystem:

1. **Business Value Strategy Domain:** This domain defines an organization's overarching intent to achieve its goals within a dynamic environment. It encompasses choices regarding value creation, capture, and resource alignment. For FortisBC, it provides the guiding vision for the platform, aligning traditional utility responsibilities with emerging opportunities in energy flexibility, emissions reduction, and advanced data governance.

2. **Business Value Proposition Domain:** This domain articulates the promise of benefit an organization offers to its diverse stakeholders, including customers, partners, and other participants. In multi-sided platform ecosystems like the FortisBC Energy Exchange, value propositions must be carefully designed to attract and serve both energy providers (e.g., prosumers, Renewable Natural Gas (RNG) producers, flexibility aggregators) and energy consumers (e.g., households, commercial businesses, municipalities).

3. **Business Value Co-Creation Domain:** This domain maps the intricate interactions among various actors (e.g., customers, partners, energy providers) who jointly produce value through shared platforms, Application Programming Interfaces (APIs), and established governance frameworks. It highlights the collaborative nature of value generation within the ecosystem.

4. **Business Value Capture Domain:** This domain outlines the mechanisms by which the platform generates sustainable returns. These returns are multifaceted, encompassing financial gains, environmental benefits, and social value, while simultaneously addressing and managing inherent risks and ensuring equity across all participants.

5.2 Six Steps Driving the Value Creation Flywheel

Before any "market" can run, it needs a repeatable rhythm. The Energy Exchange follows six simple steps that turn good data into fair trades, fast settlement, and continuous improvement. Think of them as a loop: we bring participants in safely, make their offers visible, match them transparently, prove what happened, pay promptly—and then learn so the next round is even better.

1. **Onboard & Certify:** Simple digital onboarding; clear certification steps (identity, device safety, data consent). Establishes digital governance by defining eligibility rules, identity verification, and safety certifications. Supports regulatory compliance and ensures trust.

2. **Publish & Discover:** Providers list available export capacity or flexibility windows; consumers (or their smart devices) register demand preferences. It allows participants to broadcast available energy resources or demand preferences, increasing market visibility and transparency.

3. **Match & Transact:** A rules engine or "smart contracts" pair offers and needs (e.g. a neighbourhood battery discharging during a local evening peak; RNG injection meeting a municipal procurement target). It is the platform's transactional core, enabling automated energy and data exchanges through programmable logic (e.g., smart contracts).

4. **Measure & Verify:** Secure metering and device telemetry feed into a verification layer: was energy delivered? Was the load reduced? Is Carbon Factor accurate? It captures telemetry data and validates performance to ensure transparency, auditability, and trust.

5. **Settle & Reward:** Automated settlement distributes payments, credits, or carbon certificates; disputes are minimized by cryptographic signatures and time stamps. It distributes financial and non-financial incentives transparently, enabling value realization.

6. **Analyze & Improve:** Aggregated data refine forecasts and pricing signals, attracting more providers with credible revenue streams; improved liquidity lowers consumer costs; regulators observe transparent metrics, building confidence.

The loop that strengthens the network effects:

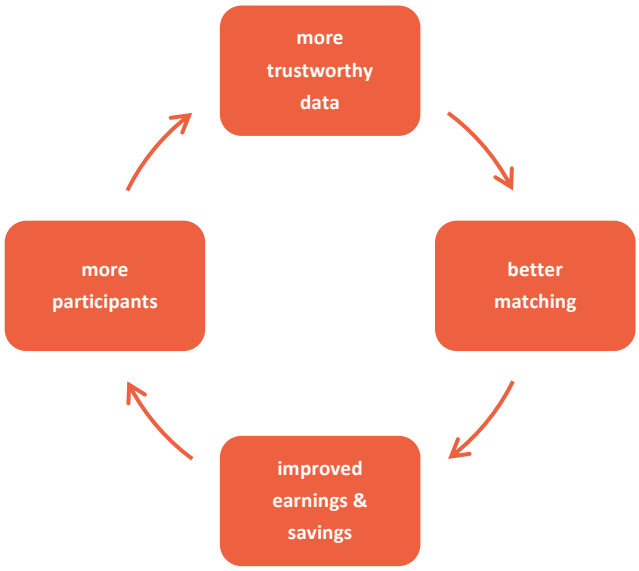

Figure 3: The Value Creation Flywheel – Network Effects Running Like a Loop increasing Value

5.3 The Value Creation Flywheel and Integrating Business Value Domains: FortisBC Energy Exchange

The FortisBC Energy Exchange runs as a loop, not a line. It begins with *Onboard & Certify*, which safely brings in people and devices—growing the participant base from the start. That broader participation, combined with rigorous *Measure & Verify* and continuous *Analyze & Improve*, produces more trustworthy data. With trustable data in place, the marketplace can *Publish & Discover* real options—solar exports, flexibility windows, prices and carbon signals—so participants can actually see what's available, which leads to better matching. *Then Match & Transact* pairs offers with needs and executes them, while *Settle & Reward* turns verified delivery into fast, fair payouts or credits—driving improved earnings and savings. Those settled, verified records feed back into analysis, sharpening signals for the next round—and the cycle repeats:

more participants → better data → better matching → better returns → even more participants.

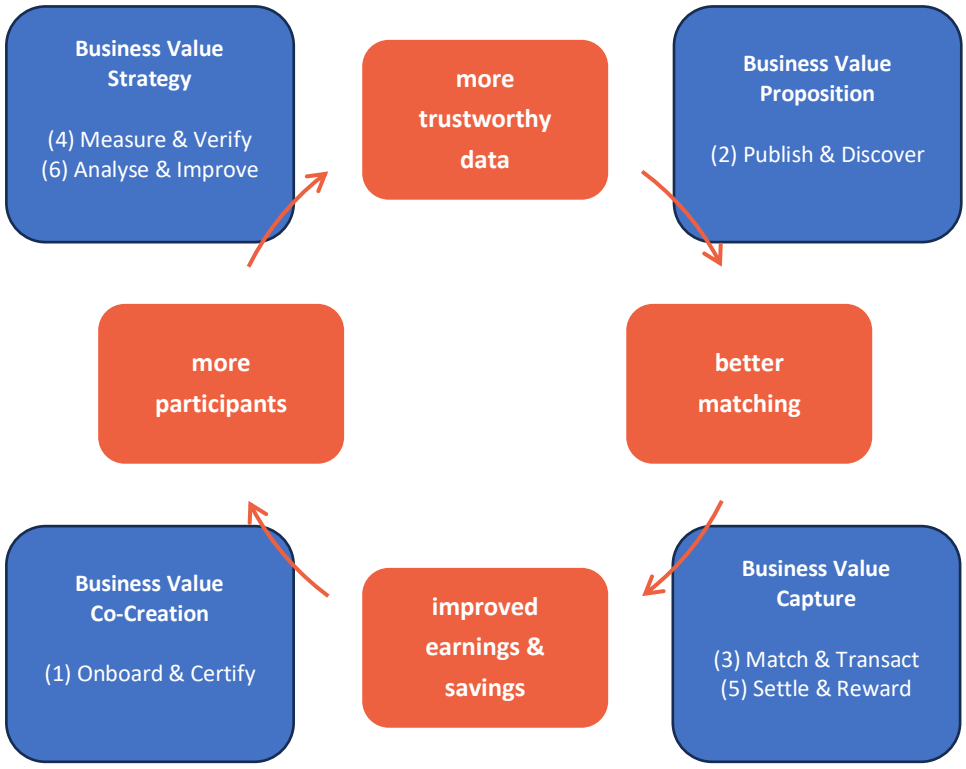

Figure 4: The FortisBC Conceptual Value Creation Model

5.3.1 Onboard & Certify: Realizing the Value Co-Creation Domain

The "Onboard & Certify" stage represents the critical entry point into the FortisBC Energy Exchange. Its design and execution are directly informed by and serve to operationalize the Value Co-Creation Domain.

- **Operationalizes the Strategic Vision:** FortisBC's strategic vision includes enabling broad, safe, and regulated participation in a low-carbon, decentralized energy system. The Onboard & Certify process translates this vision into actionable steps by defining the criteria and procedures for platform entry. This ensures that participation aligns with FortisBC's core

strategic priorities, including grid and gas safety, robust data privacy and governance, accurate carbon intensity tracking, and equitable access for all potential participants.

- **Aligns with Regulatory and Governance Commitments:** A key component of FortisBC's strategy is fulfilling regulatory mandates and maintaining public trust. Onboarding and certification formalize compliance with critical oversight bodies and regulations, such as the British Columbia Utilities Commission (BCUC) standards, data protection laws, and technical safety requirements for certified DER devices. This ensures that as FortisBC decentralizes its operations, it retains strategic control over system reliability, safety, and fair access, mitigating potential regulatory and operational risks.

- **Sets the Tone for Ecosystem Engagement:** In a platform-based model, the business strategy must balance openness with the imperative for trust and quality assurance. "Onboard & Certify" acts as a strategic gateway that builds stakeholder confidence, signals professionalism and clarity in platform operations, and attracts high-quality partners and participants. By ensuring that only validated participants and safe, compatible devices can interact within the energy exchange, this stage directly advances strategic goals related to system integrity and brand trust.

- **Enables Measurable Progress on Strategic Key Performance Indicators (KPIs):** FortisBC's strategic transformation relies on its ability to track progress against defined KPIs, such as the number of DERs onboarded, carbon emissions avoided, and reductions in interconnection times. A formal and digital onboarding process provides the necessary baseline data for these strategic measurements, enabling effective platform scaling and performance evaluation.

5.3.2 Publish & Discover: Actualizing the Value Proposition Domain

The "Publish & Discover" stage is where the Value Proposition Domain becomes tangible and actionable for participants. This stage makes the platform's offered value visible and enables stakeholders to perceive, choose, and act upon it.

- **Makes the Value Proposition Visible:** This stage is fundamental to the platform's utility. Providers can transparently publish their available clean energy or flexibility windows, while consumers (or their smart devices) can discover relevant price signals, carbon intensity information, or incentives that align with their preferences. This direct visibility of available options is central to delivering on the platform's promise of personalized energy insights and access to clean energy.

- **Enables Bidirectional Engagement and Customer Empowerment:** Value propositions in platform models extend beyond simply delivering services; they actively engage participants as decision-makers. "Publish & Discover" empowers consumers by allowing them to discover actionable options (e.g., shifting energy use for rewards) and enables producers to publish how and when they wish to contribute. This ability for participants to choose how to engage is a key differentiator from traditional, one-way utility models, fulfilling the value proposition of customer choice and empowerment.

- **Facilitates Customization and Relevance:** A core implicit value proposition of the FortisBC Energy Exchange is its commitment to "relevance" - providing personalized data, real-time insights, and flexible choices. "Publish & Discover" enables the delivery of targeted signals (e.g., based on location, time, or carbon factor) and supports personalized engagement (e.g., user-defined thresholds for participation). This responsiveness enhances the platform's meaningfulness, directly fulfilling the promise of digital empowerment and tailored services.

5.3.3 Match & Transact: Actualizing the Value Capture Domain

The "Match & Transact" stage represents the pivotal interaction point where actors actively co-create value through real-time energy and data exchanges.

- **Co-Creation Through Real-Time Interaction:** Consistent with service-dominant logic, value is always co-created jointly and reciprocally by multiple actors. At the "Match & Transact" stage, diverse actors - including prosumers, consumers, aggregators, smart devices, and FortisBC as the orchestrator - interact directly or indirectly to coordinate energy flows and services. Providers offer excess generation, stored energy, or demand response capabilities, while consumers express their energy needs or preferences. The platform then facilitates the matching and execution of these offers and needs, often through sophisticated rules engines or smart contracts. The value generated is thus a direct result of these interactions, not solely from FortisBC's actions.

- **Enabling Decentralized Value Contribution:** In contrast to traditional linear models where value largely flows from utility to customer, "Match & Transact" enables participants to actively contribute to the system's outcomes. For instance, households can shift their energy demand or export rooftop solar power; electric vehicle fleets can charge flexibly based on price signals; and neighborhood batteries can discharge to stabilize local voltage. These contributions are mutually beneficial and interdependent, serving as a hallmark of true co-creation within the energy ecosystem.

- **Smart Contracts and Rules Engines as Co-Creation Enablers:** The matching process is governed by programmable rules, often implemented as smart contracts, which are designed to be transparent, automatic, and participant-driven. These intelligent mechanisms ensure fairness and build trust in the transactions. Furthermore, participants can potentially design or select their preferred engagement logic (e.g., responding only when a price signal exceeds a certain threshold or a carbon signal is below a specific value). This shared control over matching rules enhances the sense of co-ownership and collective value generation.

5.3.4 Settle & Reward: Actualizing the Value Capture Domain

"Settle & Reward" serves as the direct mechanism by which co-created value is captured and distributed among participants. This stage operationalizes the financial, environmental, and social aspects of value capture, realizing incentive structures and ensuring equitable benefit sharing.

- **Financial Flows:** Automated settlement distributes payments, credits, or other financial incentives, directly contributing to the platform's economic value capture. This includes utility rates, subscription fees, and carbon credit transactions.

- **Non-Financial Benefits:** Beyond monetary rewards, this stage facilitates the realization of environmental and social value. For FortisBC, environmental benefits may include verified emissions reductions through renewable natural gas (RNG) injection, demand-side flexibility, and electrification initiatives. Social value is reflected in efforts to ensure equitable access to clean energy programs, inclusive onboarding processes, and community co-benefits like air quality improvements or local economic participation. These benefits are tracked alongside financial returns and are increasingly central to defining the overall success of the platform.

- **Encourages Participation:** Fair, efficient, and transparent settlement processes foster trust and encourage recurring participation, thereby scaling platform liquidity and contributing to sustained value capture.

5.3.5 Measure & Verify, Analyse & Improve: Operationalizing the Business Value Strategy Domain

The final two stages - "Measure & Verify" and "Analyse & Improve" - directly serve the Business Value Strategy Domain by turning delivery into evidence and evidence into better strategy.

The "Measure & Verify" step underpins accountability and transparency, which are indispensable for effective value capture, particularly within regulated environments. Value cannot be captured unless it is first accurately measured and rigorously proven. Without trustworthy metering and verification protocols, participants cannot legitimately claim payments, certificates, or performance metrics. This stage ensures:

- **Integrity of Data:** Real-time telemetry and robust verification protocols provide the essential data integrity required for all subsequent value capture mechanisms.

- **Basis for Financial and Non-Financial Capture:** Accurate measurement of energy delivered, load reduced, or carbon factors ensures the validity of economic transactions (e.g., payments), environmental benefits (e.g., carbon offsets), and social outcomes (e.g., conservation behavior).

"Analyse & Improve" represents the continuous cycle where strategic, ongoing value capture occurs. This stage transforms aggregated platform data into actionable insights that refine value mechanisms and optimize the entire energy ecosystem.

- **Refining Value Mechanisms:** Insights derived from advanced analytics allow FortisBC to continuously improve various aspects of its operations, such as refining pricing signals, optimizing incentive designs, and reducing system inefficiencies. This directly enhances the platform's economic value capture.

- **Operational Optimization:** The ability to predict and balance loads more efficiently, informed by comprehensive data analysis, contributes to improved resiliency and operational cost savings, bolstering strategic value capture.

- **Ensuring Sustainable Value:** This stage is essential for sustainable and scalable value capture. It enables better alignment of incentives, the development of smarter service offerings, and the reduction of overall system costs. It highlights the power of data in ensuring that value is not only promised and co-created but also delivered, validated, and continuously enhanced, contributing to FortisBC's adaptive business strategy and regional energy planning.

By systematically linking the Business Strategy, Value Proposition, Value Co-Creation, and Value Capture domains through this virtuous six-step operational flywheel, FortisBC can effectively scale participation, accelerate innovation, and deepen trust within its evolving energy ecosystem. This integrated framework positions FortisBC as a central orchestrator in a resilient, decarbonized, and digitally empowered energy future, ensuring that its transformation yields measurable and compounding benefits for all stakeholders.

5.4 Why Data Governance Is Central

If roles multiply without clear *data rules*, trust decays: participants fear misuse, regulators worry about compliance, innovators face friction, and security risks grow. Embedding data governance per PBMC element ensures:

- **Ownership clarity** (e.g. "Prosumer owns raw generation data; grants FortisBC non-exclusive licence for settlement and planning").
- **Defined sharing levels** (raw vs aggregated vs anonymized).
- **Quality expectations** (e.g. <0.5% missing intervals; forecast error tracked).
- **Security & privacy safeguards** (encryption, role-based access, consent receipts).
- **Lifecycle policies** (retention, archival, deletion triggers).

This prevents "data sprawl" — an unstructured accumulation of silos — and turns information into a curated asset with measurable value and managed risk.

5.5 Data-Value Governance Layer

Each PBMC block acquires a *data layer* and a *governance lens*. For example, the Consumer block includes interval consumption, DER capability declarations, consent settings and anonymized benchmarking outputs. Providers contribute authenticated export data, asset health (optionally), and flexibility bids. Partners introduce device firmware attestations, cybersecurity patches, algorithmic forecast artefacts and settlement calculations. The Owner block defines stewardship roles, master data catalogues, lineage tracking, retention / deletion schedules and escalation paths for data quality exceptions. Governance articulates:

a) rights (owner, steward, authorised user),

b) access tiers (public summary, shared operational, confidential),

c) quality metrics (timeliness, completeness, accuracy, provenance),

d) controls (encryption, authentication, consent withdrawal, anonymization), and

e) value linkage (cost saving, risk reduction, new service enablement).

This embedded approach converts data from a compliance burden into a managed asset that improves forecasting, reduces O&M friction and supports transparent regulatory engagement.

Below, we translate the governance idea into accessible rows. Think of each as:

What data? Who stewards it? What rules? How good must it be? How do we access it?

PBMC Block	Key Data Types (Plain)	Steward (Who looks after it)	Core Rules (Examples)	Quality Focus	Access Mode
Consumers	Hourly usage, export amounts, comfort/flex preferences	Consumer (primary); FortisBC (custodian)	Privacy policy; explicit opt-in/opt-out; data portability	Completeness; latency; consent validity	Portal, secure API (token)
Providers	Generation telemetry, RNG quality, battery state, forecasts	Provider; FortisBC verifies	Measurement & verification standard; device certification	Forecast error; uptime; provenance integrity	Event stream / API
Partners	Payment events, compliance checks, firmware attestations	Partner; FortisBC oversight	KYC/KYB; cybersecurity baseline; minimal data principle	Onboarding SLA; false positive/negative rates	Scoped API keys
Owner (Platform)	Matching events, settlement ledger, pricing models	FortisBC	Model governance; change control; audit logging	Model drift; reconciliation rate; incident MTTR	Internal data mesh + regulator view
Transactions	Trade records, fee tables, carbon certificates	FortisBC settlement team	Smart contract templates; retention schedule	Finality time; dispute rate	Append-only ledger explorer
Governance	Policies, rating scores, dispute cases	FortisBC + regulator	Versioning; transparency; escalation workflow	Policy update lead time; unresolved disputes	Public policy portal
Core Value Units	Energy tokens (kWh/GJ + carbon tag)	FortisBC (issuer); provider (source)	Token schema; digital signature process	Signature validity; carbon factor accuracy	Token API / dashboard

6. Illustrative Use Cases

6.1 Household Solar + Battery

A homeowner installs solar plus a battery. After certification (device ID, safety check), the system publishes “flexibility windows”: times it can discharge or absorb energy. The platform signals a local evening peak or a carbon-intensive period. Smart contracts automatically schedule a discharge. Metered delivery is signed; settlement credits the household at a transparent locational rate; aggregated performance data (anonymized) improve local planning.

6.2 Community RNG Digester

A farm cooperative operates a small digester injecting RNG. Gas quality sensors feed real-time composition data. The platform tokenises each GJ with its verified methane slip and carbon equivalence. Municipal bus fleet purchases “low-carbon gas bundles” (RNG attributes) through the platform. Settlement allocates environmental value; the cooperative’s performance rating improves, attracting further finance.

6.3 Flex Aggregator for SMEs

A service company aggregates HVAC systems across several SMEs. It bids a 200 kW load drop for a hot summer afternoon. The platform dispatches; automated set-point adjustments deliver the committed reduction. Interval data confirm performance; participating SMEs receive revenue shares. Historical performance builds trust; the aggregator scales.

7. Illustrative External Analogies

Other sectors show how clarity plus modular interfaces unlock ecosystem scale:

- Shopify’s merchant API terms, for instance, enabled thousands of app integrations by making data rights and performance expectations explicit — returning compounding value to both merchants and the core platform.
  (more here: https://developer.shopify.com/terms/api)

- Enel X’s city platforms integrate mobility and energy data to expand demand response portfolios and monetise flexibility.
  (more here: https://corporate.enelx.com/en/our-offer/business-solutions/flexibility)

- E.ON’s EV telemetry standardisation simplified roaming and pricing transparency across networks.
  (more here: https://www.eon.com/en/about-us/media/press-release/2024/eon-charging-network-reaches-a-new-milestone.html)

These analogies are not blueprints but evidence: when data access rules and integration pathways are predictable and trustworthy, innovation migrates to the edge while reliability remains centrally assured.

8. Implementation Considerations

8.1 Phased Roadmap

A pragmatic approach could focus on three intertwined pilots:

- **Pilot 1: Solar & Flex Feeder Zone** – select a representative electric feeder with existing or pending rooftop solar and potential flexible loads; implement standardised device onboarding, real-time telemetry validation and a simple flexibility dispatch routine targeting one or two local constraints or peak periods.

- **Pilot 2: RNG Data Hub** – integrate telemetry from two to three RNG injection sites (including quality metrics and carbon intensity factors) into the shared data layer; publish monthly verified carbon intensity dashboards.

- **Pilot 3: Unified Micro-Settlement** – develop a lightweight settlement engine to convert validated exports and flexibility events into bill credits or tokens within a T+2 cycle.

Across pilots, it is the goal to capture baseline vs. pilot KPIs: average interconnection study duration, data completeness %, peak reduction achieved, indicative capex deferral potential, and stakeholder satisfaction (survey). Early emphasis would be on *evidence production*: credible data proving that standardisation shortens queues, increases visibility, and reduces manual reconciliation.

Phase	Focus	Key Deliverables	Success Signals
1 – Foundations (Year 1)	Data & API readiness; governance charter	Developer portal; consent model; pilot meter streaming	3–5 pilot partners; <1% data gap
2 – Pilot Marketplace (Year 2)	Limited DER trades; RNG attribute pilot	Token schema; sandbox smart contracts; basic settlement	500 prosumers; 2 RNG projects; dispute rate <0.5%
3 – Scaling (Years 3–4)	Broader asset classes; flex products	Advanced pricing engine; performance ratings; analytics portal	5,000 prosumers; 10 partners; forecast error ↓
4 – Integration & Optimisation (Year 5+)	Deeper carbon signals; open data tiers	Locational carbon factor API; equity dashboards; refined tariffs	Carbon intensity transparency; regulator confidence

8.2 Regulatory Interface

The following necessary regulatory aspects need to be addressed to be *platform-ready*:

- **Sandbox**: Define measurable guardrails (participant caps, transaction volume, consumer protection triggers).

- **Tariff Evolution**: Explore unbundled components — network access, platform service fee, export settlement rate.

- **Reporting**: Provide regulator with *near real-time* dashboards: participation diversity, data quality, incident logs.

8.3 Risk & Mitigation

Every platform comes with risks that need to be addressed with mitigation-strategies from the start. Data privacy concerns, Cybersecurity, Participation inequality, Regulatory delay, Complexity overload and Settlement disputes are core issues, that need to be addressed from the beginning.

Risk	Description	Mitigation
Data privacy concerns	Fear of misuse or re-identification	Role-based access; anonymisation thresholds; transparent consent; external audits
Cybersecurity	Expanded attack surface via APIs	Zero-trust architecture; device attestation; continuous monitoring; incident drills
Participation inequality	High-income areas benefit first	Targeted incentives; community onboarding; equity metrics tracking
Regulatory delay	Approval cycles slow momentum	Early regulator co-design; transparent KPI reporting
Complexity overload	Users overwhelmed by options	Progressive disclosure; default automation; plain-language interfaces
Settlement disputes	Data mismatches or latency	Cryptographic signatures; reconciliation routines; fairness review process

9. Strategic Benefits Summary

Evidently a platform only works, when every stakeholder can tangibly generate a real benefit for itself. The following table highlights the value propositions for each stakeholder in such a future platform.

Stakeholder	Value Proposition
Households / SMEs	New income (exports/flex), carbon transparency, tailored services
Municipalities / Public Sector	Localised carbon tracking, community energy planning tools
Prosumers / RNG Producers	Faster onboarding, predictable monetisation, performance visibility
Partners (Fin/Reg/Tech)	Clear integration paths, predictable rules, scalable market access
Regulators	Transparent data, auditable compliance, controlled experimentation
FortisBC	Orchestration premiums, improved planning intelligence, strengthened brand trust, faster innovation cycles

10. Conclusion

FortisBC's existing linear utility model has delivered reliability and safety for decades. Yet the emerging decentralised, data-dense, low-carbon reality calls for an *additional layer*: a well-governed platform enabling broad participation without compromising public interest obligations. By explicitly integrating a *data-value governance layer* into a future Platform Business Model Canvas, this conceptual blueprint shows *how* trust, fairness, and efficiency can coexist with innovation and market-like interaction.

This is *not* a technology shopping list. It is a *design lens*: every role, transaction, and dataset is deliberately structured to produce verifiable value while managing risk. Adoption should be phased, experimentally validated, and co-designed with regulators and communities. The payoff is a more flexible, resilient system that channels private initiative toward shared decarbonisation goals.

Next (Paper 2): We will narrow to "Solar & Flex" and populate a domain-specific PBMC, quantify illustrative pricing / settlement mechanics, and detail granular data schemas (e.g. inverter telemetry, locational carbon calculations). Paper 3 will replicate the approach for distributed RNG.

I welcome critique, refinements, and scenario inputs (e.g. target MW, PJ, carbon factors) before locking the next iteration.

Glossary

Term / Acronym	Explanation
API (Application Programming Interface)	A structured way software systems talk to each other.
Attestation (Device)	A digital proof a device is authentic and compliant.
BCUC	British Columbia Utilities Commission – provincial energy regulator.
Carbon Intensity Factor (CIF)	Amount of CO_2e emissions per unit of energy (kWh or GJ), often time/location specific.
Core Value Unit	The fundamental "thing" exchanged on a platform — in this case a verified energy token.
Data Service Packet	Aggregated or anonymised dataset offered under controlled access.
DER (Distributed Energy Resource)	Small-scale energy asset (solar panel, battery, flexible load, etc.) located near consumption.
ESG (Environmental, Social, and Governance)	Framework for evaluating a company's non-financial performance —environmental, social, and governance.
Flexibility (Flex)	Ability to shift timing or level of energy consumption/generation.
GJ (Gigajoule)	Unit of energy (1 GJ ≈ 278 kWh).
Governance (Platform)	Rules, processes, and technical controls ensuring fair and safe participation.
Green Button	North American standard for giving customers access to their energy usage data.
KWh (Kilowatt-hour)	Standard electricity energy unit.
KYC / KYB	Know Your Customer / Know Your Business – identity verification processes.
Ledger (Permissioned)	A controlled digital record (similar to blockchain) storing transactions immutably.
MTTR (Mean Time to Repair)	Average time to recover from an incident.
Net-Metering	Allowing a prosumer to offset consumption with exported generation.
PBMC (Platform Business Model Canvas)	Structured tool to map how a platform creates and exchanges value among participants.
Prosumer	Participant who is both producer and consumer of energy.
RNG (Renewable Natural Gas)	Methane captured from organic sources (e.g. waste) and injected into gas network.
Sandbox (Regulatory)	Controlled environment where innovative models operate under relaxed rules with oversight.
SCADA (Supervisory Control and Data Acquisition)	Industrial control system monitoring and controlling infrastructure.
Settlement	Financial and data reconciliation ensuring participants are paid / charged correctly.
Smart Contract	Code that automatically enforces agreed rules (e.g. triggering payment after delivery confirmation).
SME (Small and Medium-sized Enterprise)	Business-size defined by headcount and/or revenue (e.g., tens to a few hundred employees).

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Call for Feedback

Please send us comments on:

(1) clarity of the narrative for non-specialists,
(2) adequacy of data governance elements,
(3) additional risks or equity concerns to surface, and
(4) priority use cases for the Phase 1 pilot.

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