

# The Negawatt Protocol

## Public Version 1.0 - July 2025

### Qualification

**The Negawatt Protocol (Public Version 1.0, July 2025)** sets the foundation for the Negawatt Economy, a novel system for recognising, verifying, and issuing Negawatts (NWTs)—digital records representing verified units of avoided energy use. This Protocol establishes the lawful framework, principles, and rules that underpin the recognition of energy conservation as a measurable and tradeable asset class. It articulates the governance structures, measurement methodologies, and registry processes required to uphold the integrity of Proof of Conservation (PoC).

Negawatts are neither offsets, emissions rights, nor speculative financial instruments. They are immutable records of lawful conservation, tied to measured reductions in energy consumption within defined system boundaries. Through this Protocol, conservation is treated as an affirmative, structural act—capable of holding lawful value and supporting the transition to Real Zero.

As a public version, this document prioritises transparency and stakeholder engagement. It provides a clear and accessible overview for market participants, regulators, infrastructure owners, and the broader public. Certain technical details, operational procedures, and DAO-internal governance mechanisms are intentionally reserved within a Private Protocol to safeguard the integrity of issuance processes and protect against potential misuse.

This Protocol remains a work in progress, intended as a first step in defining the operational, legal, and philosophical boundaries of the Negawatt Economy. It will evolve through iterative refinements informed by stakeholder feedback, technological advancements, and real-world application. Future versions will address identified gaps, including enhanced measurement and verification methodologies, detailed market mechanisms, and comprehensive scalability strategies—while maintaining a core commitment to integrity, transparency, and lawful conservation.

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The Negawatt DAO recognises that the success of this Protocol depends on its ability to adapt to diverse energy systems, jurisdictional requirements, and emerging technologies. This public version invites collaboration from validators, project proponents, regulators, and other stakeholders to ensure the Protocol is robust, scalable, and aligned with global decarbonisation objectives.

By publishing this preliminary framework, the Negawatt DAO sets the sequence for a transformative approach to energy conservation—one that fosters a credible and transparent system for recognising restraint as a lawful structural asset. Constructive feedback is welcomed to refine and strengthen this Protocol in service of a dynamic and evolving energy landscape.

## 1. Introduction

### 1.1 Purpose of the Negawatt Protocol

The Negawatt Protocol establishes the authoritative framework for the issuance, validation, governance, and retirement of **Negawatts**—digital assets representing **one megawatt hour (MWh) of verified avoided energy use**. These assets are instantiated only upon the successful demonstration of **Proof of Conservation (PoC)**.

This Protocol serves as the foundational standard for the **Negawatt Economy** and is designed to ensure technical integrity, legal defensibility, and operational transparency in the recognition and monetisation of conserved energy. This Protocol is aligned with the mission of accelerating the transition to **Real Zero** through measurable, verifiable, and lawful reductions in energy use.

This Public Version sets out the core principles and governance structure. A separate Private Protocol governs internal validator procedures and Registry operations.

No Negawatt shall be issued except where energy conservation is measured, verified, and evidenced in accordance with this Protocol.

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## 1.2 Scope

This Protocol governs:

- The principles and processes for defining, measuring, and validating energy conservation.
- The issuance of **Negawatts** as digital assets recorded on the Negawatt Registry.
- The role, responsibilities, and accreditation of Validators and Subnets.
- The integration of **digital Measurement, Reporting, and Verification (dMRV)** systems.
- The governance structures and dispute resolution mechanisms underpinning this Protocol.
- The interface between this Protocol and relevant regulatory, technical, and market standards.

## 1.3 Legal Status

Negawatts are digital assets recognised under the **Negatrope Legal Doctrine** as lawful representations of conserved energy. They are **neither emissions offsets, nor tradable allowances within cap-and-trade schemes**. Rather, Negawatts represent the positive act of conservation as measured structural restraint.

Issuance of Negawatts does not confer legal rights over physical infrastructure but rather evidences a lawful claim over a measured conservation outcome within the defined project boundary and timeframe.

This Protocol is administered by the **Negawatt DAO**, a Swiss Foundation constituted for the purpose of governance, integrity maintenance, and evolution of this Protocol and associated infrastructure.

## 1.4 Relationship to Other Frameworks

The Negawatt Protocol complements but is distinct from:

- Carbon offset registries and schemes (e.g. ACCU, VER, CER).
- Energy efficiency obligations (e.g. white certificate schemes).

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- Building and operational standards (e.g. NABERS, Green Star).
- Voluntary ESG frameworks (e.g. GRI, SASB, ISSB).

Where overlap exists, this Protocol ensures **no double counting or claim duplication**. Integration pathways with recognised schemes may be developed through formal Shared Negatropes Instruments.

## 1.5 Core Philosophy

The Negawatt Protocol gives effect to the core philosophy of the Negawatt Economy:

- **What we conserve is what we measure.**
- Conservation is treated as an affirmative, structural act—not the absence of activity but the presence of restraint and intelligence.
- Conservation outcomes are treated as assets only where they are **lawful, measured, verified, and permanent within the terms of this Protocol**.
- The Negawatt is issued not as a right to pollute, but as a recognition of restraint and lawful stewardship.
- This Protocol is grounded in the principle of the **Negatropes—affirming restraint as a lawful contribution to systemic and biospheric coherence**.

## 1.6 Document Control

This Protocol is maintained under strict version control by the DAO Governance Committee. Changes to this Protocol require formal governance processes, including stakeholder consultation, technical review, and ratification under the DAO's voting procedures.

The **current version number, date of adoption, and change log** are maintained in the master registry.

## 1.7 Binding Nature

For all Validators, Subnets, and participants operating under this Protocol, compliance is mandatory. Breaches may result in suspension, removal, or legal action as per the Governance and Dispute Resolution provisions herein.

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## 2. Purpose

### 2.1 Purpose of This Protocol

The purpose of the Negawatt Protocol is to establish the legally and technically binding framework by which **Negawatts (NWT)** are defined, measured, validated, issued, and retired within the Negawatt Economy.

Negawatts represent **one megawatt hour (MWh) of verifiable avoided energy use**. They are issued only upon demonstration of **Proof of Conservation (PoC)** through structured measurement and verification. This Protocol safeguards the legitimacy of conservation claims by ensuring that each Negawatt reflects a lawful, measurable, additional, and permanent reduction in energy use.

This Protocol exists to:

- **Standardise** the process for defining and validating energy conservation outcomes.
- **Protect the integrity** of the Negawatt digital asset and its underpinning conservation claims.
- **Provide certainty and clarity** to Validators, Subnets, project proponents, investors, and regulators.
- **Ensure alignment** with the broader principles of lawful conservation, energy system integrity, and climate transition objectives.

### 2.2 Why This Protocol Is Necessary

Without a unified, credible, and transparent framework for quantifying and verifying avoided energy use, energy conservation lacks the evidentiary weight required to function as a lawful digital asset. Existing systems (e.g. offsets, white certificates, voluntary reporting) often suffer from fragmentation, poor additionality controls, or lack of enforceable governance.

The Negawatt Protocol addresses this gap by:

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- Providing a robust, defensible basis for issuing assets that reflect real, measured conservation.
- Preventing double counting through strict boundary and baseline rules.
- Enabling interoperability with other registries and standards while maintaining clear chain of custody over conservation claims.
- Supporting market confidence by establishing transparent, auditable processes.

## 2.3 Conservation as Asset Class

This Protocol recognises **conservation itself as an asset class**. Negawatts are neither offsets nor substitutes for emissions allowances. They are affirmative outcomes (measured units of avoided demand) that hold intrinsic and market value because they reduce systemic energy burden, support grid resilience, and align with climate objectives.

This Protocol transforms **what we conserve** into lawful digital assets, creating a new class of infrastructure-backed value streams based on restraint, not extraction.

## 2.4 Objectives of this Protocol

The Negawatt Protocol seeks to achieve the following objectives:

1. **Integrity:** Establish the highest standard of measurement, reporting, and verification (dMRV) for energy conservation.
2. **Transparency:** Ensure all processes, decisions, and issued Negawatts are open to audit, and verification.
3. **Conservatism:** Bias towards underclaiming in the face of uncertainty to protect system credibility.
4. **Efficiency:** Streamline processes to enable credible conservation claims to enter digital markets without undue burden.
5. **Alignment:** Support energy transition pathways towards Real Zero through lawful, verifiable reductions in demand.

## 2.5 Relationship to Proof of Conservation (PoC)

This Protocol operationalises the concept of **Proof of Conservation** by providing the governance, technical methodology, and verification processes necessary to translate **measured conservation outcomes into digital assets**.

Proof of Conservation within this Protocol requires that all claims of avoided energy use:

- Originate from valid baselines.
- Demonstrate additionality beyond business as usual.
- Are measured using accepted tools and methodologies.
- Are validated independently through accredited Validators.
- Are recorded in immutable, transparent registries.

Negawatts are issued only upon satisfaction of these requirements.

## 3. Definitions

For the purposes of this Protocol, the following definitions shall apply.

### 3.1 Core Terms

#### **Negawatt (NWT):**

A digital asset representing **one megawatt hour (MWh) of verified avoided energy use**.

A Negawatt is issued only upon satisfaction of the requirements of this Protocol and is recorded on the Negawatt Registry with unique identifying metadata.

**Negatrope (n.):** A lawful, verifiable act of ecological restraint that sustains systemic order by avoiding extractive or destructive impact. Rooted in the concept of negative entropy (negentropy), a Negatrope formalises non-action—such as not mining, not clearing, or not emitting—as an affirmative juridical contribution to biospheric coherence.

#### **Proof of Conservation (PoC):**

The evidentiary standard required to justify issuance of a Negawatt. PoC requires documented, verifiable, and auditable demonstration that a quantifiable reduction in

energy use has occurred relative to an established baseline and that such reduction meets the criteria of additionality, permanence, and non-duplication.

**What We Conserve:**

The total quantum of avoided energy use (expressed in MWh) that is validated under this Protocol as resulting from lawful, measured conservation interventions.

**Conservation:**

The lawful, deliberate act of reducing energy use through restraint, efficiency, or structural intervention, resulting in measurable reduction against a valid baseline.

**Baseline:**

The counterfactual condition representing the expected energy use in the absence of the conservation intervention. Baselines are established under the methodologies specified in this Protocol and are subject to Validator review and DAO governance.

**Additionality:**

A condition whereby the conserved energy would not reasonably have occurred without the intervention and cannot be attributed to business as usual, regulatory compliance, or pre-existing obligations.

## **3.2 Governance Terms**

**Negawatt DAO:**

The Swiss Foundation constituted as the legal governance entity responsible for the administration, maintenance, and evolution of this Protocol, the Validator Network, and the Registry. The DAO operates under defined statutes and voting procedures.

**Validator:**

An accredited organisation or entity authorised by the DAO to assess conservation claims, verify compliance with this Protocol, and approve issuance of Negawatts. Validators must meet competency, independence, and integrity standards defined by the DAO.

**Subnet:**

A geographically or sectorally defined operational domain within the Negawatt Protocol.

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Subnets are authorised by the DAO to apply Protocol methodologies in specific contexts and manage local Validator networks.

**Registry:**

The digital ledger or equivalent system where all issued Negawatts are recorded, including project metadata, issuance history, ownership transfers, and retirements.

**Governance Committee:**

The body within the DAO responsible for oversight of Protocol compliance, updates, dispute resolution, and Validator accreditation.

**DAO Governance Assembly:**

The collective body of all participants in the DAO entitled to vote on Protocol matters, including ratification of updates, appointment of committees, and approval of structural changes. The Assembly exercises final authority under the DAO Charter.

### **3.3 Technical Terms**

**Digital Measurement, Reporting, and Verification (dMRV):**

The structured use of digital systems (e.g. metering, IoT devices, SCADA, blockchain) to ensure transparent, tamper-resistant, and accurate measurement of energy use and conservation outcomes.

**Structural Conservation:**

Enduring reductions in energy demand achieved through permanent or semi-permanent interventions (e.g. building upgrades, process optimisation, equipment replacement), as distinct from temporary behavioural changes.

**Non-duplication:**

A requirement that conservation outcomes verified under this Protocol cannot simultaneously be claimed under other registries or schemes unless formally recognised through Shared Negatropes Instruments.

**Shared Negatropes Instrument:**

A formal mechanism under DAO governance enabling dual claims (e.g. Negawatt and

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carbon credit) where methodologies are harmonised, boundaries are aligned, and double counting risks are mitigated.

#### **Force Majeure Event:**

An extraordinary event beyond reasonable control (e.g. natural disaster, war, legal prohibition) that materially impacts the validity or continuity of a conservation claim.

### **3.4 Interpretative Principles**

Where ambiguity arises in interpretation, this Protocol shall be read:

1. In favour of conservatism, biasing towards protection of integrity over quantity of issuance.
2. Consistently with the objectives set out in Section 2.
3. In alignment with international best practice for MRV and conservation verification.

## **4. Measurement Methodology**

### **4.1 Core Principles**

The Measurement Methodology defines how energy conservation is measured, verified, and converted into Negawatts under this Protocol. It is structured to ensure that:

- All conservation claims are credible, auditable, and transparent.
- Only **structural conservation** (not temporary reductions or artefacts of accounting) qualifies.
- This Protocol aligns with internationally recognised best practice in Measurement, Reporting, and Verification (MRV), while maintaining its unique legal and philosophical integrity.

## 4.2 Establishing the Baseline

### 4.2.1 Purpose of the Baseline

The baseline establishes the counterfactual scenario against which conservation is measured. It represents the energy use that would have occurred **in the absence of the conservation intervention**.

A valid baseline is the necessary condition for demonstrating **Proof of Conservation (PoC)**.

### 4.2.2 Baseline Integrity Rules

- **Realistic:** Must reflect credible, documented operational parameters.
- **Transparent:** All assumptions, data sources, and methodologies must be auditable.
- **Conservative:** In the presence of uncertainty, default to underestimating conservation.
- **Fixed for Claim:** Once set for a specific claim period, baselines cannot be altered retrospectively.
- **Exclusive:** No double counting across multiple claims, projects, or registries.
- **Expressed in Metric Units and System Performance Terms:**  
All baselines must be expressed in **metric units (SI)**, relevant to system performance. For cooling systems, this shall be **kilowatts per refrigeration tonne (kW/RT)**, not Coefficient of Performance (COP) or Energy Efficiency Ratio (EER). For other systems, performance must be stated in direct energy units such as **kWh, MWh, or kWh/m<sup>2</sup>** as appropriate. These units must allow transparent comparison between baseline and post-intervention outcomes and be aligned with recognised industry standards (e.g. BCA Green Mark, ASHRAE, ISO 50001).

### 4.2.3 Acceptable Baseline Methods

1. **Historical Performance Baseline (Preferred)**
  - Based on a minimum of 12 months of pre-intervention data.
  - Adjusted for exogenous variables (weather, occupancy, process loads).
2. **Engineering Modelling Baseline**

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- Used where no historical data exists (new build, major refurbishment).
- Must conform to recognised standards (e.g. ASHRAE, NABERS, ISO 50001).
- Requires calibration or peer benchmarking.

### 3. Deemed Baseline (Limited Scope)

- Only for standardised, regulator-approved measures (e.g. LED upgrades).
- Must be explicitly approved by the DAO.

#### 4.2.4 Adjustments

Permissible adjustments include:

- **Weather normalisation** (degree-days, climate zones).
- **Production or occupancy normalisation** (documented material changes).
- **Exclusion of load shifting artefacts.**

All adjustments must be documented, justified, and approved by Validators.

## 4.3 Demonstrating Additionality

### 4.3.1 Additionality Requirements

To qualify for Negawatt issuance, conservation outcomes must be:

- **Regulatory Additionality:** Exceeding mandatory standards.
- **Market Additionality:** Beyond business-as-usual expectations.
- **Financial Additionality:** Not economically inevitable without intervention.
- **Temporal Additionality:** Not pre-existing or prior to claim registration.

### 4.3.2 Evidence of Additionality

Evidence may include:

- Investment decisions (e.g. board approvals, funding applications).
- Barriers removed (e.g. capex constraints, knowledge gaps).
- Exclusion of pre-existing or naturally occurring reductions.

Validators must assess and document additionality compliance in all cases.

## 4.4 Ensuring Permanence

### 4.4.1 Definition

Permanence refers to the expected duration of the conservation outcome. Structural interventions must persist for their expected lifecycle, or a minimum period defined by methodology.

### 4.4.2 Permanence Periods

- **Structural measures:** Equipment or design life (e.g. HVAC, BMS upgrades).
- **Operational measures:** Minimum 12-month persistence, with periodic revalidation.
- **Behavioural measures:** Not eligible unless embedded in enduring operational controls.

## 4.5 Measurement and Verification (M&V)

### 4.5.1 Digital MRV (dMRV) Integration

All claims must leverage **digital MRV** systems where feasible, including:

- Sub-metering.
- SCADA data.
- IoT platforms.
- Control systems with verifiable outputs.

Data must be timestamped, tamper-evident, and auditable.

### 4.5.2 Measurement Approaches

Measurement shall conform to recognised and accepted standards to ensure accuracy, transparency, and credibility. All energy performance data submitted under this Protocol must be expressed in **metric units (SI)**. **Dimensionless performance indicators such as Coefficient of Performance (COP) are not accepted as primary evidence.**

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Approved measurement approaches include:

- **IPMVP Options A–D** (International Performance Measurement and Verification Protocol)
- **ISO 50001** Energy Management Systems Frameworks
- **ASHRAE Guidelines** for Measurement and Verification (e.g. ASHRAE Guideline 14)
- **Singapore Building and Construction Authority (BCA) Green Mark Code for Environmental Sustainability for Buildings (Version 4.0 or subsequent)**
  - Specifically for projects involving chilled water plant optimisation or replacement.
  - Measurement must align with **Green Mark Code Section 3.3 (Chiller Plant Efficiency)** and **Appendix D (Energy Modelling Requirements)** for Platinum-level performance.
  - **Performance must be expressed as system efficiency in kilowatts per refrigeration tonne (kW/RT) or in equivalent kilowatt hours (kWh) consumption over defined cooling loads.**
  - Data must reflect **MWh consumption before and after intervention, with adjustments for load profiles and climatic conditions** as specified in the Code.
  - Supporting evidence shall include commissioning reports, instrumentation calibration certificates, and post-implementation performance verification.

#### 4.5.2.1 Metric Standardisation for All Projects

Under this Protocol, the following **metric units are mandatory for reporting energy performance and conservation outcomes**:

Measurement Type	Required Unit
Energy Consumption	kilowatt hours (kWh), megawatt hours (MWh)
Energy Efficiency (Cooling)	kilowatts per refrigeration tonne (kW/RT)
Area Normalisation	kilowatt hours per square metre (kWh/m <sup>2</sup> )
Power Demand	kilowatts (kW), megawatts (MW)
Thermal Energy	kilojoules (kJ), megajoules (MJ), where relevant

COP and Energy Efficiency Ratio (EER) may be recorded for internal reference but are not accepted for issuance decisions under Proof of Conservation.

#### 4.5.2.2 Application of Methodologies

The choice of measurement approach must be justified based on:

- The nature of the conservation intervention.
- The sector and jurisdiction.
- The availability of historical data and monitoring infrastructure.
- Alignment with the principle of conservatism where uncertainty exists.

All methodologies are subject to Validator approval and must be fully documented within the Verification Report.

#### 4.5.3 Reporting Requirements

Reports must include:

- Baseline documentation.
- Post-intervention data.
- Adjustment rationales.
- Audit trail of methodologies and tools used.

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- Independent validation summary.

## 4.6 Verification

Verification is mandatory prior to issuance. Validators are responsible for:

- Confirming data integrity.
- Reviewing methodology application.
- Assessing additionality and permanence.
- Approving issuance or requiring further evidence.

All decisions must be documented and logged in the Registry.

## 4.7 Governance of Methodologies

All baseline and measurement methodologies are subject to:

- Annual review by the DAO Technical Committee.
- Continuous improvement based on Validator feedback.
- Publication of updates through controlled versioning.

Methodologies may be expanded through formal governance processes to accommodate emerging technologies, sectors, or conservation methods.

## 4.8 Continuous Data, Instrumentation, and Constant Commissioning

### 4.8.1 Continuous Data as the Basis for Issuance

All Negawatts issued under this Protocol must be based on **1-minute interval streamed data**. This data constitutes the lawful evidentiary basis for Proof of Conservation (PoC). Issuance is contingent on the availability of this continuous data as recorded through approved digital MRV (dMRV) systems.

Such systems must ensure:

- Time-stamped, tamper-evident data capture.
- Immutable storage aligned with Registry and Validator requirements.

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- Data integrity suitable for audit and legal scrutiny.

Validators must confirm all issuance is directly traceable to this data and that any gaps or anomalies have been addressed.

#### **4.8.2 Permanent Instrumentation and Calibration Requirements**

Instrumentation must:

- Be permanently installed for the duration of the conservation period.
- Hold current calibration certificates in accordance with jurisdictional and manufacturer standards.
- Be capable of supporting continuous 1-minute data streaming.
- Provide evidence of calibration within the Validation Report.

#### **4.8.3 Alignment with Constant Commissioning Practices**

Projects must operate under conditions equivalent to **constant commissioning**, aligned with principles from ISO 50001, ASHRAE Guidelines, and recognised best practice. This ensures conservation outcomes remain valid throughout the permanence period, not solely at issuance.

Validators must verify that:

- Instrumentation supports continuous performance tracking.
- Data systems enable early detection of performance degradation.
- Systems align with operational best practice for commissioning and verification.

#### **4.8.4 Registry Metadata Requirements (Continuous Verification)**

Registry entries reflect continuous verification through immutable, time-stamped governed by DAO-approved technical standards.

## 5. Issuance Process

The issuance process for Negawatts ensures that each digital asset represents a verified, lawful, and immutable claim of conserved energy, backed by Proof of Conservation (PoC). This process is designed to safeguard integrity, prevent double counting, and maintain transparency throughout the lifecycle of each Negawatt.

### 5.1 Overview

Negawatts are only issued following a formal, documented process comprising the following sequential stages:

1. **Project Registration**
2. **Data Submission**
3. **Validation by Accredited Validator**
4. **Approval for Issuance**
5. **Minting and Registry Entry**

Each stage is mandatory. No retrospective claims, speculative forecasts, or unverified conservation outcomes are permitted under this Protocol.

### 5.2 Project Registration

#### 5.2.1 Registration Requirements

Prior to any claim for Negawatt issuance, the project must be formally registered within this Protocol, including:

- Defined system boundaries (physical and operational).
- Baseline methodology (including metric units, e.g. kW/RT).
- Project proponents and their legal status.
- Intended conservation measures.
- Commitment to data transparency and dMRV integration.

Registration requires submission of a **Project Design Document (PDD)**, detailing expected conservation outcomes, baseline data, and adherence to this Protocol.

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### 5.2.2 Registration Approval

The Validator reviews and approves the registration for eligibility, ensuring:

- Baseline is compliant.
- Additionality is evidenced.
- Measurement methodology is appropriate.
- No conflicts or overlaps with existing claims.

Upon approval, the project receives a unique **Project Registration ID**.

## 5.3 Data Submission

### 5.3.1 Reporting Period

Conservation data must be submitted for a defined reporting period (typically 12 months unless otherwise approved).

### 5.3.2 Required Data

- Metered energy consumption (pre- and post-intervention) in **metric units (kWh, MWh)**.
- System performance metrics (e.g. **kW/RT** for cooling systems).
- Adjustments for weather, occupancy, production where applicable.
- Evidence of equipment specifications, commissioning reports, and calibration certificates.
- Documentation of operational conditions during the reporting period.

All data must be submitted through the approved dMRV platform or Validator portal, with secure, tamper-evident timestamping.

## 5.4 Validation by Accredited Validator

### 5.4.1 Validation Scope

Validators conduct an independent assessment of:

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- Baseline compliance and accuracy.
- Additionality demonstration.
- Measurement integrity (data completeness, accuracy, adjustments).
- Methodology application.
- Conservation outcome quantified in **MWh avoided energy use**.

#### 5.4.2 Validation Deliverables

Validators must produce a **Validation Report** confirming:

- Quantity of MWh conserved.
- Evidence of compliance with Protocol.
- Recommendations for issuance (or reasons for rejection).

Validation Reports are retained in the Registry for auditability.

### 5.5 Approval for Issuance

The Validator submits the validated conservation claim to the Registry Administrator with:

- Validation Report.
- Verified conservation data (in MWh).
- Associated project metadata.

The Registry Administrator verifies completeness and consistency before authorising issuance.

### 5.6 Minting and Registry Entry

#### 5.6.1 Issuance

Upon approval, Negawatts are minted as unique digital assets and recorded in the Registry with:

- Unique Negawatt ID.

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- Project Registration ID.
- Reporting period and MWh conserved.
- Validator ID.
- Methodology reference.
- System boundary and location metadata.

Each Negawatt is linked to the specific reporting period and cannot be reissued or duplicated.

### 5.6.2 Registry Transparency

All issued Negawatts are:

- Publicly visible in the Registry (excluding commercially sensitive data).
- Tagged as **Active** until retired, transferred, or invalidated.
- Accompanied by audit logs of issuance, transfer, and retirement.

### 5.6.3 Carbon-Indexed Classification of Negawatts

In addition to core issuance criteria, Negawatts are classified according to the **Carbon-Indexed Classification System**. This system reflects the emissions intensity of the grid where the conservation occurred, providing transparency for stakeholders on the relative carbon impact of the conserved energy.

Classification	Grid Intensity (kg CO <sub>2</sub> e / MWh)
<b>Diamond</b>	> 1.0 kg CO <sub>2</sub> e / MWh
<b>Platinum</b>	0.7 – 1.0 kg CO <sub>2</sub> e / MWh
<b>Gold</b>	0.4 – 0.7 kg CO <sub>2</sub> e / MWh
<b>Silver</b>	0 – 0.4 kg CO <sub>2</sub> e / MWh

## Application and Purpose

- Grid intensity shall be determined using official national or regional datasets (e.g. AEMO, EMA, IEA, BCA) aligned with the reporting period.
- This classification provides **contextual transparency only** and does not affect the fundamental issuance of **1 NWT = 1 MWh avoided use**.
- The classification is included in Registry metadata to support ESG disclosures, impact reporting, and potential future market differentiation.

## Registry Metadata Example

Field	Value
Grid Intensity	0.85 kg CO <sub>2</sub> e / MWh
Classification	<b>Platinum</b>

Classification is immutable after issuance, unless new evidence mandates reclassification through DAO governance.

## Clarification

- This system is separate from system performance metrics (e.g. kW/RT).
- This classification does not imply eligibility for carbon markets or offset schemes.
- It is a **conservation impact signal only**, aligned with transparency objectives.

## 5.7 Rejection or Rework

If a claim fails validation:

- The project proponent may amend and resubmit.
- The Validator must clearly document reasons for rejection.
- Disputes are resolved per the Governance and Dispute Resolution provisions.

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## 5.8 Retirement and Finality

Negawatts may be retired for:

- Claiming conservation outcomes in ESG reporting.
- Compliance with contractual obligations.
- Voluntary demonstration of stewardship.

Retirement is recorded permanently in the Registry; retired Negawatts cannot be reactivated.

## 6. Validators

### 6.1 Role of Validators

Validators are independent, accredited entities authorised by the **DAO** to perform verification activities required for the issuance of Negawatts under this Protocol.

Validators serve to uphold the integrity of Proof of Conservation within the Negawatt Economy. Their role is not merely procedural but central to maintaining the lawful recognition of conservation as a measurable, auditable, and tradeable outcome.

The Validator's primary duty is to ensure that all conservation claims meet the standards of:

- **Accuracy** (data is correct),
- **Transparency** (methodologies are clear and traceable),
- **Integrity** (compliance with Protocol requirements),
- **Conservatism** (avoiding overstatement of savings).

Validators serve as the guardians of the Proof of Conservation (PoC) principle and are accountable to the DAO and to the legal framework governing the issuance of digital conservation assets.

### 6.2 Validator Accreditation

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Validators must be formally accredited by the **DAO Governance Committee**.

Accreditation criteria include:

- Demonstrated technical competence in relevant sectors (e.g., energy systems, industrial processes, building performance, off-grid systems).
- Independence from project proponents and associated financial interests.
- Proven experience in measurement and verification standards (e.g., IPMVP, ISO 50001, ASHRAE Guidelines).
- Organisational capacity to meet reporting and quality assurance obligations.
- Adequate insurance or liability cover appropriate to their verification activities.

Accreditation is granted for specific **Scopes of Practice** (e.g., building systems, industrial processes, remote microgrids) and jurisdictions. Renewal is subject to performance review.

## 6.3 Duties and Responsibilities

Validators are responsible for:

### 1. Project Registration Review

- Assessing completeness and eligibility of Project Design Documents (PDDs).
- Confirming baselines are lawful, conservative, and transparent (including disaggregation where required).

### 2. Measurement & Verification Assessment

- Verifying energy conservation outcomes through review of data, methodologies, and adjustments.
- Confirming dMRV integrity and alignment with approved protocols.

### 3. Issuance Recommendation

- Preparing a **Validation Report** recommending issuance or rejection.
- Stating the quantum of avoided energy (MWh) verified.
- Recommending Negawatt classification (Diamond, Platinum, Gold, Silver).

### 4. Ongoing Oversight

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- Monitoring projects over their declared conservation period for permanence assurance (spot audits, data reviews).

## 6.4 Independence and Conflicts of Interest

Validators must:

- Declare any real or perceived conflicts of interest prior to engagement.
- Refrain from validating projects where they hold a financial, advisory, or ownership interest.
- Operate independently from project proponents, technology suppliers, or financing entities associated with the project.
- Adhere to the DAO's Code of Ethics and Professional Conduct.

Breach of these principles may result in suspension, revocation of accreditation, or legal action.

## 6.5 – 6.7 Reserved for the Private Protocol

## 6.8 Registry Metadata: Validator Fields

Each issued Negawatt must record the responsible Validator's identifier, accreditation scope, and verification reference to ensure transparency and auditability.

### Example Registry Metadata Fields

Field	Value
Validator ID	VLD-SG-2025-007
Scope of Practice	Remote Island Energy Systems
Accreditation	Valid to 2028
Validation Ref.	VLD-2025-NWT-ISLAND-001

## 7. Governance and Dispute Resolution

### 7.1 Governance Structure

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The governance of the Negawatt Protocol is administered through the **DAO**, a Swiss-based Foundation governed by its Charter and aligned with the objectives of lawful conservation and the issuance of verifiable digital assets representing avoided energy use.

### 7.1.1 Governance Objectives

The DAO's role is to:

- Maintain the integrity of this Protocol.
- Oversee Validators and accredit new participants.
- Ensure compliance with PoC standards.
- Manage updates to methodologies and classifications.
- Resolve disputes with impartiality and transparency.
- Protect the reputation and legal standing of the Negawatt Economy.

## 7.2 Governance Committees

The DAO operates through specialised committees with delegated authority:

Committee	Core Functions
<b>Technical Committee</b>	Protocol updates, methodology approvals, baseline reviews.
<b>Accreditation Committee</b>	Validator onboarding, monitoring, and revocation.
<b>Registry Oversight Committee</b>	Integrity of the Registry, audit processes, double counting safeguards.
<b>Dispute Resolution Committee</b>	Hearing and resolving disputes between parties under this Protocol.

Committees report to the DAO Governance Assembly and act within defined authority.

## 7.3 Protocol Updates

All amendments to this Protocol, including changes to methodologies, classifications (Diamond, Platinum, Gold, Silver), or definitions, must be proposed through the **Technical Committee** and ratified by DAO governance vote.

Updates follow a structured process:

1. Proposal submission (with justification).
2. Public review and comment period (minimum 30 days).
3. Committee recommendation.
4. DAO vote (thresholds defined in DAO Charter).
5. Publication of updated Protocol version.

Version history and amendments are recorded immutably in the Registry.

## 7.4 Dispute Resolution

### 7.4.1 Scope of Disputes

Disputes under this Protocol may arise between:

- Project proponents and Validators.
- Validators and DAO Committees.
- Registry participants (buyers, sellers) regarding issuance integrity.
- DAO governance participants regarding application of rules.

Disputes may concern:

- Baseline determinations.
- Issuance decisions.
- Classification (Diamond, Platinum, Gold, Silver).
- Validator conduct.
- Alleged breaches of Protocol.

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## 7.5 Enforcement and Breaches

Breach of this Protocol may result in:

- Removal from Registry access.
- Revocation of issued NWTs.
- Loss of accreditation for Validators.
- Legal action by the DAO where reputational or legal standing is threatened.

All enforcement actions are recorded in the Registry for transparency.

## 7.6 Transparency and Auditability

The DAO commits to:

- Publicly publishing minutes of governance decisions (except commercially confidential matters).
- Maintaining auditable records of issuance, Validator performance, and dispute outcomes.
- Reporting annually on Protocol performance, governance activities, and any enforcement actions.

## 7.7 Governance Principles

All governance under this Protocol adheres to the following principles:

- **Lawfulness:** Aligns with jurisdictional and international legal frameworks.
- **Integrity:** Maintains the trustworthiness of Proof of Conservation.
- **Transparency:** Decisions are open to scrutiny.
- **Independence:** Governance is free from conflicts of interest.
- **Accountability:** Governance bodies answerable to DAO participants.

## 8. Registry Rules

### 8.1 Purpose of the Registry

The Registry is the authoritative, immutable ledger of all issued Negawatts (NWTs) and related project data under this Protocol. It ensures:

- **Transparency** of issuance.
- **Prevention of double counting.**
- **Traceability** of each NWT to its conservation event and associated metadata.
- **Integrity** of Proof of Conservation (PoC).

The Registry underpins the lawful, verifiable nature of the Negawatt Economy.

Exclusions from Registry Scope:

The Registry records only lawful, verified conservation outcomes expressed in megawatt-hours (MWh) of avoided energy use. It does not record, issue, or recognise carbon offsets, emissions rights, allowances, or financial derivatives. The Registry is not a carbon market platform and does not support speculative instruments. Its sole function is to provide an immutable, auditable record of verified conservation under this Protocol.

### 8.2 Registry Functions

The Registry shall:

- Record all issued Negawatts, uniquely identified.
- Store associated project, validation, and classification metadata.
- Track transfers, retirements, and cancellations of NWTs.
- Provide auditable history for all Registry events.
- Support public and participant reporting, subject to privacy settings.
- Operate as the single source of truth recognised by the DAO and participants.

### 8.3 Data Recorded in the Registry

Each issued Negawatt shall contain the following immutable metadata fields:

Field	Example Value
Unique NWT ID	NWT-SG-2025-001
Project Registration ID	NWT-SG-PROJECT-005
Issuance Date	30 June 2025
Reporting Period	1 Jan 2024 – 31 Dec 2024
Verified MWh Conserved	352 MWh
Grid Intensity	1,200 kg CO <sub>2</sub> e / MWh
Classification	<b>Diamond</b>
Validator ID	VLD-SG-2025-007
Baseline Reference	Diesel genset fuel records (disaggregated)
System Performance Metric	kWh/litre diesel (baseline)
Permanence Period	10 years
Methodology Reference	Section 4.2.3(c) Diesel Microgrid Baseline
Registry Status	Active

### 8.4 Status of Registry Entries

NWT entries carry a clear, immutable status:

Status	Meaning
<b>Active</b>	Valid, tradable NWT representing verified conservation.
<b>Retired</b>	Claimed for reporting, disclosure, or contractual obligation; no longer tradable.
<b>Cancelled</b>	Invalidated due to breach, dispute resolution, or governance decision.

Only **Active** NWTs may be traded or transferred.

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## 8.5 Transfers and Retirement

Participants may:

- Transfer NWTs between registered accounts subject to compliance.
- Retire NWTs voluntarily for disclosure, ESG claims, or contractual purposes.
- View full chain of custody via the Registry.

All transfers and retirements are recorded permanently with timestamps and initiating party.

## 8.6 Prevention of Double Counting

The Registry enforces:

- Unique NWT IDs tied to unique conservation events.
- Discrete project boundaries to prevent overlap.
- Cross-referencing with national or sectoral registries where relevant.
- Audit trails and validator attestations to confirm exclusivity of claims.

## 8.7 Public Access and Confidentiality

The Registry shall maintain a **publicly accessible ledger** of issued NWTs, including:

- Volume of MWh conserved.
- Classification (Diamond, Platinum, etc.).
- Geographical and system boundary metadata.

Confidential commercial data (financial arrangements, proprietary methods) may be redacted but all conservation claims and issuance records remain public to uphold integrity.

## 8.8 Integration with Digital Infrastructure

The Registry may operate on:

- Distributed ledger technology (DLT) for transparency and immutability.
- Smart contracts to manage issuance, transfer, retirement rules.
- API integrations with third-party registries, ESG platforms, and MRV systems.

All Registry infrastructure must align with DAO-approved technical standards.

## 8.9 Registry Governance

The Registry is governed by the **DAO's Registry Oversight Committee**, responsible for:

- Approving new participants (issuers, buyers, Validators).
- Monitoring integrity and performance.
- Approving corrections or cancellations.
- Reporting breaches to the DAO.

The Committee maintains alignment with this Protocol's principles and DAO Charter.

## 8.10 Auditing and Assurance

- Independent audits of Registry operations are conducted annually.
- Results published to DAO participants.
- Validators and participants must cooperate with audit processes.

## 8.11 Legal Standing

Entries in the Registry constitute the **sole lawful record of issued Negawatts**. Only Registry records are recognised for ownership, trade, or retirement purposes.



## 8.12 Registry Principles

The Registry operates under these guiding principles:

- **Transparency:** Public access to core issuance data.
- **Integrity:** Immutable records backed by PoC.
- **Accountability:** Governance oversight and audit trails.
- **Exclusivity:** Preventing double counting.
- **Trustworthiness:** Foundation for market credibility.

## 9. Legal Considerations and Liability

### 9.1 Legal Status of Negawatts (NWTs)

Negawatts (NWTs) are **digital records representing verified units of conserved energy (1 MWh avoided use)**, established through lawful measurement, validation, and immutable registration under this Protocol.

An NWT does not constitute:

- A right to consume energy.
- A right to emit carbon.
- A financial security, derivative, or commodity under conventional markets.
- A carbon offset or emissions reduction certificate.

NWTs represent **measured restraint** in energy use and exist solely within the framework of lawful conservation recognised by the **DAO**.

### 9.2 Ownership and Transfer

Ownership of NWTs is determined solely by their status in the **Negawatt Registry**. Transfer of ownership occurs through Registry-recorded transactions in accordance with Protocol rules.

Participants acquire no rights beyond:

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- Recognition of the conserved MWh.
- Ability to transfer, retire, or reference the NWT.
- Potential market-derived benefits (ESG reporting, voluntary claims, DAO privileges).

No warranties are provided regarding future value, price, or acceptance beyond the Registry.

## 9.8 Intellectual Property

The Negawatt Protocol, Registry infrastructure, and associated materials are proprietary to the DAO. Participants receive no rights beyond those expressly granted for participation.

Participants may not copy, reverse engineer, or commercially exploit these systems outside authorised use.

## 9.9 Regulatory Compliance

Participants are responsible for ensuring their engagement with the Negawatt Economy complies with:

- Local laws on energy, environmental claims, digital assets, and financial services.
- Any applicable disclosure or reporting obligations.

The DAO provides no legal advice or guarantees of compliance with specific jurisdictional frameworks.

## 9.10 Principles of Lawful Conservation

This Protocol affirms that all issued NWTs are rooted in:

- **Measured conservation of energy.**
- **Lawful documentation of restraint.**
- **Compliance with international best practice for verification and transparency.**

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This doctrine distinguishes NWTs from speculative instruments and affirms their standing as lawful records of conserved structure within energy systems.

## **9.11 No Forward Issuance**

No NWT may be issued based on projected, forecast, or modelled savings. Only actual, measured, and validated conservation outcomes supported by metered performance shall qualify for issuance. This ensures alignment with the principles of lawful conservation and Proof of Conservation (PoC).

# **10. Definitions and Interpretations**

## **10.1 Definitions**

Unless the context requires otherwise, the following definitions apply throughout this Protocol:

### **Active (NWT Status):**

A Negawatt recorded as valid, tradeable, and available for transfer within the Registry.

### **Additionality:**

A principle requiring that conservation outcomes would not have occurred without the intervention recognised under this Protocol.

### **Baseline:**

The established reference point for energy consumption or system performance against which conservation outcomes are measured, expressed in metric units (e.g., MWh, kW/RT) and supported by auditable evidence.

### **Cancellation (NWT Status):**

A Negawatt rendered permanently invalid due to breach, error, or governance decision.

### **Classification (NWT):**

The quality tier assigned to a Negawatt (Diamond, Platinum, Gold, Silver) based on grid intensity (kg CO<sub>2</sub>e / MWh) and system performance at the time of issuance.

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**DAO (Decentralised Autonomous Organisation):**

The governance body of the Negawatt Economy, constituted as a Swiss foundation with authority over this Protocol and the Registry.

**Diesel-Dependent Remote Site:**

A site without grid access reliant on diesel generation for electricity, subject to specific baseline methodologies under this Protocol.

**Disaggregation:**

The process of separating diesel fuel use for electricity generation from other uses (e.g., vehicles, machinery) to establish an accurate energy baseline.

**Grid Intensity:**

The emissions factor expressed as kilograms of CO<sub>2</sub> equivalent per megawatt-hour (kg CO<sub>2</sub>e / MWh) applicable to the electricity supply of the project location.

**Issuance:**

The process by which a verified quantum of avoided energy (MWh) is minted as Negawatts in the Registry following Validation and approval.

**Metric Units:**

Standard international units of measurement (SI) required under this Protocol, including kWh, MWh, kW, kW/RT, and kg CO<sub>2</sub>e / MWh.

**Negawatt (NWT):**

A digital record representing **1 megawatt-hour (MWh) of verified, avoided energy use**, issued under this Protocol, immutable within the Registry, and tradable subject to rules herein.

**Negatrope:**

See definition in Section 3.1.

**Permanence:**

The duration for which the conservation outcome is expected to persist, classified according to system type and Validator assessment.

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**Proof of Conservation (PoC):**

The evidentiary standard required for issuance of Negawatts, based on actual, measured, and independently validated conservation outcomes.

**Project Proponent:**

The individual or entity responsible for implementing and submitting a project for consideration under this Protocol.

**Registry:**

The official ledger operated under DAO authority, recording all issued Negawatts, project metadata, and transaction history.

**Retirement (NWT Status):**

The voluntary or contractual action rendering a Negawatt non-tradeable, typically for disclosure, ESG reporting, or obligation fulfilment.

**System Boundary:**

The defined physical and operational limits within which conservation outcomes are measured and validated.

**Validator:**

An independent, accredited entity authorised by the DAO to verify compliance, measurement, and issuance criteria under this Protocol.

**Validation Report:**

The documented output of a Validator confirming the quantity of conserved energy and compliance with Protocol standards, forming the basis for issuance.

## 10.2 Interpretations

- Headings are for convenience only and do not affect interpretation.
- The singular includes the plural and vice versa.
- A reference to a person includes an individual, corporation, trust, partnership, or entity recognised at law.
- Where "including" is used, it is without limitation unless expressly stated.
- Any conflict between this Protocol and DAO Charter shall defer to the Charter.

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- Where measurement standards are updated (e.g., ISO, ASHRAE), the latest version prevails unless specified.
- All references to laws are deemed to include amendments or successors.

## **11. Ratification and Authority**

This Protocol is ratified by the Negawatt DAO under its Charter and shall govern all issuance, validation, and governance activities related to Negawatts unless and until superseded by a formally approved updated version.