

Research Article

Virtual Net Metering: An Innovative Venture in Energy Sector by Maharashtra Government

Nitin Tejmal Kale* , Amit Aggrawal 

School of Commerce and Management Studies, Sandip University, Nashik, India

Abstract

Virtual Net Metering (VNM) is a pioneering regulatory mechanism introduced by the Maharashtra Electricity Regulatory Commission (MERC) to accelerate the adoption of renewable energy, particularly solar power, by enabling multiple electricity consumers to share the benefits of a single offsite solar power installation. This study critically examined the operational framework, policy design, stakeholder impact, and challenges of implementing VNM in Maharashtra. This research employs a mixed-methods approach, incorporating policy analysis, stakeholder interviews, and evaluation of pilot project data from housing societies and public institutions. The results indicate that the VNM enhances energy accessibility, reduces consumer electricity bills, and promotes distributed energy generation. However, issues such as regulatory delays, a lack of consumer awareness, and infrastructural limitations hinder their widespread adoption. This study proposes policy reforms, capacity-building measures, and incentive structures to strengthen the deployment of VNM. Findings position VNM as a transformative tool in achieving the state's clean energy targets, democratizing energy access, and fostering public-private collaboration in the green energy transition. The emergence of Virtual Net Metering (VNM) marks a significant shift in how we approach urban sustainability, particularly within the regulatory landscape of Maharashtra. Traditionally, solar adoption was a privilege reserved for those with ample private roof space. However, through the forward-thinking initiatives of the Maharashtra Electricity Regulatory Commission (MERC), this barrier is being dismantled. VNM functions as a collaborative bridge, allowing diverse groups—from apartment dwellers in high-rises to sprawling public institutions—to collectively invest in and reap the rewards of a single, offsite solar array. It effectively decouples the physical location of energy production from its consumption, making renewable energy a shared community asset rather than a solitary luxury. Our deep dive into the state's VNM framework reveals a dual narrative of immense potential and practical friction. On one hand, the socioeconomic benefits are undeniable. By analyzing pilot data from housing societies, it is clear that VNM acts as a powerful equalizer, democratizing access to clean energy and providing tangible relief on monthly utility expenditures. It transforms "passive consumers" into "active stakeholders" in the green transition.

Keywords

Virtual Net Metering, Renewable Energy Policy, MERC, Solar Energy, Decentralized Generation, Energy Access

1. Introduction

The global energy landscape is transitioning towards sustainability, with states and governments adopting innovative

strategies to increase renewable energy adoption. The transition to a sustainable energy future is a global imperative, and

*Correspondence: Nitin Tejmal Kale (nitintkale1976@gmail.com)

Received: 13 July 2025; Accepted: 7 May 2026; Published: 28 May 2026



Copyright: © The Author(s), 2026. Published by Science Publishing Group. This is an **Open Access** article, distributed under the terms of the Creative Commons Attribution 4.0 License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

India has made significant strides in promoting renewable energy sources. Maharashtra, one of India's largest and most industrialized states, is making strides in the renewable energy sector. Among the various initiatives undertaken by the Indian government, the introduction of VNM in Maharashtra is a significant step towards fostering a more equitable and efficient energy ecosystem. Traditional net metering allows consumers

to generate solar power on-site and receive credit for the excess energy supplied to the grid. However, VNM extends this concept by enabling consumers to benefit from the solar energy generated at remote or shared locations. This study aimed to provide an in-depth understanding of Maharashtra's VNM policy, its comprehensive overview, its potential benefits, the challenges it faces in Maharashtra, and its expected contribution to the state's clean energy goals.



Figure 1. Virtual Net Metering scheme launched by Government of Maharashtra In co-ordination with Central Government.

1.1. Concept of Virtual Net Metering

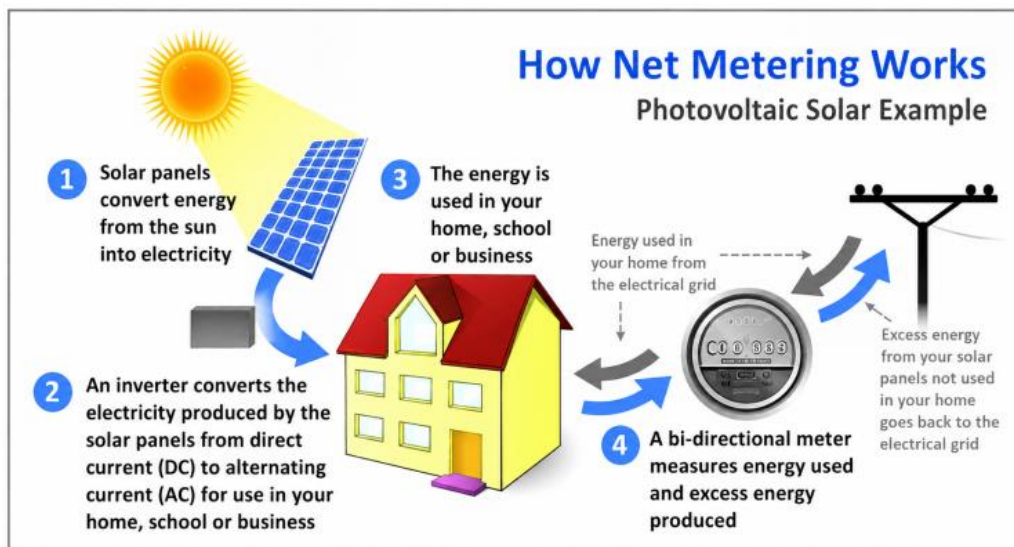


Figure 2. Traditional Net Metering.

In traditional net metering, a single meter measures the energy consumption and generation of a household or business using an installed renewable energy system. Any excess energy produced is fed back into the grid, and the owner receives credits that offset the future electricity consumption. However, this model has limitations, particularly for communal or multi-tenant buildings, farms, or communities where individuals cannot install their own renewable systems.

Virtual net metering addresses these limitations by allowing the output from a renewable energy source such as a solar farm to be allocated to multiple users. Virtual net metering (VNM) is an innovative approach to renewable energy utilization and management that allows multiple energy users to share the benefits of a single renewable energy generation system. This system is particularly beneficial for entities that may not have the capability or space to install their own renewable energy resources such as solar panels. VNM is particularly beneficial in urban areas or multi-dwelling units where individual installations are impractical [12, 15].

Virtual Net Metering allows energy consumers who cannot install solar panels on-site (owing to space, ownership, or technical constraints) to participate in the renewable energy economy. Under VNM, the energy generated from a shared or offsite solar installation is allocated to multiple participants based on their energy consumption and the corresponding credits are applied to their electricity bills.

Unlike traditional net metering, in which surplus energy is

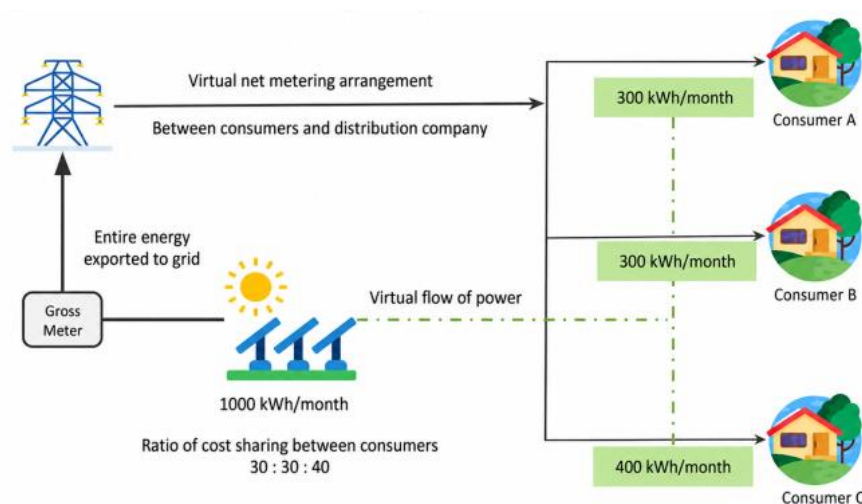
credited to the same consumer's account, thereby reducing individual electricity bills, VNM allows energy credits to be shared across multiple consumers. This creates a virtual energy market, in which consumers can buy and sell excess solar power, leading to greater energy efficiency and grid stability [11].

1.2. Definition and Framework

Through this model, the government aims to enable housing societies, small commercial establishments, and government bodies to participate in solar power generation [4, 9].

1.3. Working Mechanism

- 1) Solar Energy Generation: Energy is produced by remote solar plants or rooftops.
- 2) Energy Allocation: A share of the total generated energy is assigned to different consumers based on predefined agreements.
- 3) Billing credit: The allocated energy is credited to the participants in a proportionate ratio of generation in their electricity bills, thereby reducing their overall consumption and cost.
- 4) Grid Interaction: Surplus energy fed into the grid strengthens the distribution system and supports the energy balance.



Source: CEEW-CEF analysis

Figure 3. Concept of Virtual Net Metering.

2. Literature Review

Virtual Net Metering (VNM) has gained international recognition as a viable model for inclusive and equitable solar-

energy deployment, particularly in urban and constrained environments. VNM allows multiple consumers to receive solar energy credits from a remotely installed photovoltaic (PV) system, making it a key enabler for decentralized renewable energy access.

2.1. Global Perspective on VNM

Numerous studies have highlighted the economic and social benefits of VNM. For instance, Carley et al. found that VNM programs in the United States significantly improved energy equity by providing access to solar energy to renters and low-income households [13, 15]. Similarly, Schöniger et al. evaluated Germany's energy cooperatives and noted increased public participation and energy democratization due to shared solar programs [16].

2.2. Policy and Regulatory Context

A report by the International Renewable Energy Agency emphasised that clear regulatory frameworks, metering infrastructure, and financial incentives are critical for the success of VNM [4, 5, 17]. California's (MASH) program and New York's Community Solar initiatives are often cited as successful models owing to their regulatory clarity and targeted subsidies [3, 15, 16, 18].

2.3. VNM in India

In India, VNM is still at a nascent stage. While Delhi and Karnataka initiated pilot programs, most states faced implementation barriers due to policy ambiguity and infrastructure gaps [20]. A recent study by Rathi and Muralidharan on community solar in India highlighted that virtual models can help meet the targets of the National Solar Mission, particularly in dense urban environments and for rental consumers [19, 21].

2.4. Research Gap and Relevance

Although international best practices and central government schemes such as the KUSUM and UDAY support decentralized solar deployment, limited academic research has been conducted specifically on the implementation of VNM at the state level in Maharashtra [22]. Existing government reports provide operational details but lack analytical assessments regarding feasibility, consumer behavior, and policy bottlenecks [1, 2, 4, 6, 14, 23].

2.5. Significance of the Study

This study fills a crucial gap by providing a comprehensive policy and operational analysis of VNM in Maharashtra. It aims to guide stakeholders, including regulators, distribution companies, housing societies, and solar developers, in understanding the economic, social, and environmental implications of VNM with the goal of facilitating wider adoption [7-12].

3. Virtual Net Metering: A Strategic Initiative by Maharashtra

This study adopted a mixed-methods exploratory research

design to assess the implementation, effectiveness, and challenges of Virtual Net Metering (VNM) in Maharashtra. This methodology integrates qualitative policy analysis with quantitative secondary data evaluation to ensure a holistic understanding of the subject.

3.1. Research Objectives

- 1) To evaluate the policy and regulatory framework governing VNM in Maharashtra
- 2) To assess the operational performance of VNM pilot projects
- 3) To identify challenges and stakeholder perceptions related to implementation
- 4) To propose actionable recommendations for strengthening VNM adoption

3.2. Data Sources

This study used both primary and secondary data.

- 1) Policy Documents: Regulations issued by the Maharashtra Electricity Regulatory Commission (MERC), notifications by the Ministry of New and Renewable Energy (MNRE), and circulars from MSEDCL [1, 4].
- 2) Secondary Data: Data from annual reports of MSEDCL (2020–2023), MERC consultation documents, and solar installation statistics from the MNRE [2, 4, 14].
- 3) Case Studies: Information on selected pilot VNM projects in Maharashtra (e.g., housing societies in Pune and Nagpur) and comparative insights from other Indian states and global benchmarks.
- 4) Expert Interviews (Qualitative): Semi-structured interviews with six stakeholders—two MERC officials, two MSEDCL engineers, and two private solar developers—were conducted virtually during December 2024–January 2025.

3.3. Analytical Framework

- 1) Thematic Policy Analysis: Qualitative data from regulatory documents and interviews were coded thematically to identify policy gaps, stakeholder concerns, and implementation challenges [7, 8].
- 2) Quantitative Analysis: Secondary data on energy credits, solar generation capacity, and adoption trends were analysed using descriptive statistics to evaluate the performance of VNM in Maharashtra [4, 20, 23].

3.4. Validity and Limitations

Efforts have been made to ensure data triangulation across multiple sources. However, the absence of longitudinal project-level data limits the scope of long-term performance analysis. Additionally, stakeholder interviews were limited to early adopters, potentially biasing positive perceptions of VNM success.

3.5. Alignment with National Policies

The VNM initiative aligns with India's National Solar Mission that aims to install 100 GW of solar power by 2030. It supports government programs such as the KUSUM and UDAY schemes by promoting decentralized energy and reducing distribution losses [4, 6, 20, 22, 23].

3.6. Methodology

This study adopted a mixed-methods approach to investigate the implementation of VNM in Maharashtra. The methodology includes the following components.

- 1) A comprehensive review of the existing literature on VNM, including academic articles, policy documents, and case studies, was conducted to identify key concepts, benefits, challenges, and best practices.
- 2) An analysis of the Maharashtra government's policies and regulations related to VNM was undertaken to understand the framework governing its implementation.
- 3) Relevant data, such as solar energy generation, grid stability metrics, and consumer adoption rates, were collected and analyzed to assess the performance and outcomes of VNM in Maharashtra.
- 4) Case studies of specific VNM projects along with initiatives in Maharashtra were examined to provide in-depth insights into implementation challenges and successes.

4. Operational Framework of VNM in Maharashtra

The Maharashtra government has established a framework for VNM implementation, outlining the key components and processes involved. These include:

- 1) Consumers interested in participating in VNM must register with the designated authority and provide necessary documentation.
- 2) A platform will be created to facilitate the exchange of energy credits between consumers.
- 3) Appropriate tariffs are set for the purchase and sale of solar energy credits to ensure fairness and transparency.
- 4) Measures will be taken to integrate the VNM into the existing electricity grid to ensure seamless operation and safety.

4.1. Steps to Participate in a VNM Project

Participation in a Virtual Net Metering (VNM) project involves several steps. Here, a general guide is circulated by the utility to help consumers.

- 1) A group of interested consumers' needs to be gathered, such as neighbors or members of a housing society who want to participate in the VNM project.
- 2) A common location for solar-power installation is required. This could be the rooftop of a building within the

same distribution as the licensee's supply area.

- 3) A solar developer or energy service company (ESCO) must be engaged in the design, installation, and maintenance of a solar power system.
- 4) An Agreement with the solar developer and among the group members to outline the terms of the project, including cost sharing, maintenance, and benefit distribution.
- 5) Apply to the local distribution company (DISCOM) to approve the VNM project. This includes details of the solar installation, participating consumers, and the proposed benefit-sharing arrangement.
- 6) Once approved, the solar developer installs the system. After the installation, the system was commissioned and connected to a grid.
- 7) The solar power generated is credited to the participating consumers' electricity bills based on the agreed-upon ratio. This reduced the overall electricity cost.

4.2. Ratio Calculation Procedure

The ratio calculation procedure for virtual net metering involves several key steps to ensure that energy credits are fairly allocated among participants. A comprehensive breakdown of the process is as follows:

- 1) The first step is to measure the total energy produced by the renewable energy system over a specific billing period. This is typically performed by using a single production meter that records the amount of electricity generated.
- 2) The next step is to identify all participants who share their energy credits. This includes residential customers, businesses, and other entities that have agreed to participate in the VNM programme.
- 3) Each participant's share of generated energy was determined based on their energy consumption or other agreed-upon criteria. For instance, if a participant consumes 20% of the total energy consumed by all participants, they may receive 20% of the credits generated by the renewable facility.
- 4) For participants, energy credits can be calculated by multiplying the total energy produced by the facility by their respective shares. For example, if a solar farm produces 1000 kWh in a month and a participant is entitled to 20%, they receive 200 kWh of credit.
- 5) The calculated credits are then applied to participants' utility bills in the following billing cycle. This reduces the overall electricity cost and promotes the financial viability of renewable energy systems.
- 6) VNM programs typically include provisions for adjustments based on changes in participation or variability in energy production. Regular reconciliations ensure that credits are accurately reflected, and any discrepancies are addressed.

5. Challenges in Implementing VNM in Maharashtra

5.1. Technical Challenges

- 1) Managing the intermittency of solar energy on a large scale may require additional grid infrastructure.
- 2) Upgrading metering infrastructure to support virtual net metering and accurate crediting.
- 3) Monitoring energy flow from off-site installations to multiple participants requires robust tracking systems.

5.2. Regulatory and Policy Constraints

- 1) Coordination between Maharashtra's energy regulators, utilities, and consumers is essential.
- 2) Determine the right pricing and tariff model for VNM credits to ensure viability.
- 3) MSEDCL's billing infrastructure requires modifications to accommodate VNM credits seamlessly.

5.3. Consumer Awareness

- 1) VNM is a relatively new concept that requires public education to ensure widespread adoption.
- 2) Many consumers may hesitate to participate because of a lack of clarity regarding the benefits and technical aspects.

However, these challenges present new opportunities for innovation and collaboration. By proactively addressing these issues, Maharashtra can position itself as a leader in VNM implementation and set an example for other states in India.

6. Case Studies and Global Examples

1. New York's Community Solar Garden

In New York (United States), similar to VNM, community solar gardens have successfully implemented projects to provide solar energy benefits from shared solar projects to multiple households. The model has witnessed significant success with improved consumer engagement and reduced energy costs [3, 13].

2. Germany's Renewable Energy Cooperatives

Germany's cooperatives promote shared energy generation and consumption, a model akin to VNM, allowing individuals and communities to invest in decentralized solar farms and share profits. Maharashtra can draw inspiration from global initiatives to improve policy designs [16].

3. Solterra Eco Luxury Apartments, California

The Solterra Eco Luxury Apartments in the Scripps Ranch, California, is a pioneering example of a successful Virtual Net Metering (VNM) project with a capacity of 338 kW. This project was successfully implemented in a residential community on rooftops, carports, and ground-mounted solar arrays to

achieve significant energy savings and a sustainable annual output goal of approximately 992,325 kWh green energy generation. This project became San Diego's first Zero Net Energy apartment complex, meaning that the total amount of energy used by the building annually is roughly equal to the amount of renewable energy created on-site [15, 18].

4. ICAST's Multifamily Affordable Housing Projects

The International Center for Appropriate and Sustainable Technology (ICAST) has been instrumental in deploying solar PV systems for low-income residents in multifamily affordable housing (MFAH) through VNM [18].

5. Truth or Consequences Housing Authority (TCHA), New Mexico

This project involved a 230 kW ground-mounted solar system installed in a common recreational area of a low-rise, single-story row home complex for seniors and low-income families. The solar system offsets 90% of the property's electricity load, significantly reducing the utility costs for residents [9].

6. Santa Fe County Housing Authority (SFCHA), New Mexico

This project included a 220 kW rooftop solar system with three different properties, offsetting 45% of the electricity load for 196 units. The project successfully reduced fossil fuel consumption and provided substantial energy savings to low-income families [9].

7. California's Multifamily Affordable Solar Housing (MASH) Program

The MASH program provides incentives for installing solar PV systems in low-income multifamily housing. Utilizing VNM to distribute benefits among tenants is an example of successful VNM. A multifamily housing complex in Southern California installed a solar PV system under the MASH program, benefiting from the VNM tariffs. The project provided significant energy savings for tenants and reduced the overall electricity demand [18].

7. Recommendations for Successfully Implementation of VNM

To ensure the successful and widespread adoption of VNM in Maharashtra, the following recommendations are proposed:

- 1) Public awareness campaigns: Conduct awareness campaigns to educate consumers about the benefits and processes of VNM and provide technical assistance for participation, ensuring that they understand how the system works and how it will impact their electricity bills.
- 2) Collaborate with Stakeholders: Engage with all stakeholders, including regulatory bodies, government agencies, utilities, private sector players, and consumers, early in the project to ensure smooth coordination and compliance and promote VNM adoption.
- 3) Regulatory Reforms: Streamline policy frameworks to ensure smoother coordination between regulatory bodies and utilities to ensure that the VNM project complies

with the regulations set by the Maharashtra Electricity Regulatory Commission (MERC) [1].

- 4) Incentive programs: Introduce incentives such as subsidies or tax breaks to encourage housing societies and SMEs to participate in VNM.
- 5) Technical infrastructure: Hire experienced contractors and technical experts familiar with VNM systems who invested in advanced metering infrastructure and data analytics tools to support VNM operations so that seamless credit allocation is possible.
- 6) Pilot Projects: Plan the financial aspects, including initial investment, maintenance costs, and expected savings; launch pilot projects in selected areas; and monitor the performance to test the effectiveness of VNM before statewide implementation.

8. Conclusion

Virtual Net Metering (VNM) is a promising pathway for democratizing renewable energy access in Maharashtra. This study examined the operational design, policy framework, and implementation challenges associated with VNM, using data from pilot projects and stakeholder insights. These findings indicate that VNM can substantially improve solar energy adoption among consumers lacking direct rooftop access, particularly in urban housing societies, government institutions, and SMEs. The model not only reduces electricity bills but also promotes grid stability through distributed energy generation.

However, the success of VNM in Maharashtra is currently constrained by gaps in policy clarity, technical infrastructure readiness, and consumer awareness. While the Maharashtra Electricity Regulatory Commission (MERC) has laid a foundational regulatory structure, additional efforts are needed to streamline the approval processes, modernize billing systems, and promote public understanding of the program's benefits.

In conclusion, VNM should not be viewed merely as a solar-sharing mechanism but as a strategic tool to support decentralized energy, reduce carbon emissions, and advance energy equity. Scaling up VNM requires an integrated approach that involves regulatory reform, investment in digital infrastructure, and coordinated stakeholder engagement. With these measures, Maharashtra has the potential to become a leading example of innovative solar governance in India.

Abbreviations

MSEDCL	Maharashtra State Electricity Distribution Company Limited
VNM	Virtual Net Metering
MERC	Maharashtra Electricity Regulatory Commission
IRENA	International Renewable Energy Agency

Acknowledgments

I would like to express my sincere gratitude to those who contributed to the success of this research but do not meet the formal criteria for authorship.

I am deeply grateful for the technical assistance provided by the MSEDCL authorities, and field technicians, whose expertise in data collection and equipment maintenance was vital to the completion of this study. I also wish to thank the individuals and organizations that provided materials, software, and specialized equipment, without which this work would not have been possible.

Finally, I would like to acknowledge the insightful discussions and administrative support received from my colleagues throughout the development of this manuscript.

Author Contributions

Nitin Tejmal Kale: Conceptualization, Data curation, Investigation, Methodology, Resources, Writing – original draft

Amit Aggrawal: Formal Analysis, Project administration, Supervision, Validation, Writing – review & editing

Data Availability Statement

Regulatory Framework & Policy Data: Guidelines and official orders regarding Virtual Net Metering (VNM) were accessed via the Maharashtra Electricity Regulatory Commission (MERC) official portal at <https://merc.gov.in/>.

Utility Performance & Solar Statistics: Operational data, consumer adoption trends, and annual distribution reports were obtained from the Maharashtra State Electricity Distribution Company Limited (MSEDCL) at <https://www.mahadiscom.in/>.

National Solar Benchmarks: Data regarding India's National Solar Mission and decentralized energy statistics were sourced from the Ministry of New and Renewable Energy (MNRE), Government of India.

International Case Studies: Comparative data for global VNM models (e.g., MASH California, New York Community Solar) were accessed through the International Renewable Energy Agency (IRENA) and the respective state program reports.

Conflicts of Interest

The authors declare that there are no financial or personal relationships with other people or organizations that could inappropriately influence or bias the content of this research paper. There are no conflicts of interest to disclose regarding the publication of this study.

Appendix

The following material provides additional technical context and regulatory documentation referenced throughout the study.

Appendix I. Technical Flow and Stakeholder Arrangements

The interaction between the solar generator and multiple beneficiaries is a critical component of the Virtual Net Metering framework. As referenced in the Working Mechanism section of the main text, the flow of energy and subsequent billing credits are managed through a centralized grid interaction.

Figure 3 illustrates the detailed data flow and contractual relationships required between the Solar Developer (ESCO), the Distribution Licensee (DISCOM), and the end consumers to facilitate seamless credit allocation. Figure 3. Detailed Stakeholder and Data Flow in VNM Projects (Source: Adapted from CEEW-CEF analysis) [cite: 2].

Appendix II. Regulatory Reference Links

For further verification of the policy frameworks discussed in the Operational Framework and Data Availability Statement, the following digital repositories may be consulted:

MERC Official Orders: Comprehensive archives of regulatory rulings on net metering and grid integration [cite: 2].

MNRE Guidelines: National standards for the KUSUM and UDAY schemes that support decentralized solar deployment in Maharashtra [cite: 2].

MSEDCL Circulars: Internal utility guidelines for the physical verification and registration of VNM participants [cite: 2].

Appendix III. Sample Ratio Calculation Worksheet

The Ratio Calculation Procedure described in the main text follows a proportional credit system. A sample calculation for a community of three participants (A, B, and C) sharing a 1000 kWh monthly generation is provided below for clarity:

Table A1. Ratio Calculation Procedure.

Participant	Agreed Share (%)	Monthly Credit (kWh)
Consumer A	30%	300 kWh
Consumer B	30%	300 kWh
Consumer C	40%	400 kWh
Total	100%	1000 kWh

References

- [1] Reports from Maharashtra Electricity Regulatory Commission (MERC).
- [2] Annual reports from Maharashtra State Electricity Distribution Co Ltd (MSEDCL).
- [3] Wolske, K. S. et al. "Community Solar Programs and Energy Equity." *Renewable Energy Journal*, 2023.
- [4] Ministry of New and Renewable Energy (MNRE), Government of India, *Solar Statistics 2022*.
- [5] IRENA, "Virtual Net Metering: Mechanisms & Case Studies," 2022.
- [6] Central Electricity Authority (CEA), India. "Net Metering Guidelines."
- [7] Ghosh, D. "Net Metering in India: Progress and Challenges." *Energy Policy Review*, 2021.
- [8] Maheshwari, P. "Solar Adoption in Urban India: Barriers and Opportunities." *IJREE*, 2020.
- [9] International Energy Agency (IEA), "Renewable Energy for All, *Global Policy Review*," 2022.
- [10] Singh, S. "Decentralized Energy Generation in Urban India." *Urban Energy*, 2020.
- [11] Sinha, V. "Distributed Solar: Indian Perspectives." *Solar Today*, 2021.
- [12] Goel, R. "Virtual Net Metering: Data Analysis and Impact." *Renewable Systems*, 2021.
- [13] Carley, S. et al. "Solar Energy Equity Programs in the U.S." *Energy Justice Studies*, 2021.
- [14] MNRE, "National Solar Mission Targets and Policy Updates," Govt. of India, 2022.
- [15] Carley, S., Engle, S. "Community Renewable Energy Policies." *Public Policy Quarterly*, 2021.
- [16] Schöniger, S. et al. "Energy Democracy via Cooperatives in Germany." *Energy Policy*, 2020.
- [17] IRENA, "Enabling Frameworks for VNM," 2022.
- [18] California Multifamily Affordable Solar Housing (MASH) Program Reports, 2023.
- [19] Rathi, S.; Muralidharan, V. "VNM Pilots in India: Lessons Learned," *Solar Policy India*, 2023.
- [20] Delhi Solar VNM Pilot Project Report, Delhi Energy Department, 2022.
- [21] Rathi, S.; Muralidharan, V., "Community Solar in Urban India," 2023.
- [22] KUSUM and UDAY Government Schemes, MNRE & MoP, India, 2022.

- [23] Maharashtra State Solar Policy and VNM Implementation Reports, GoM, 2023.