



Compensation Mechanisms for Distributed Generation

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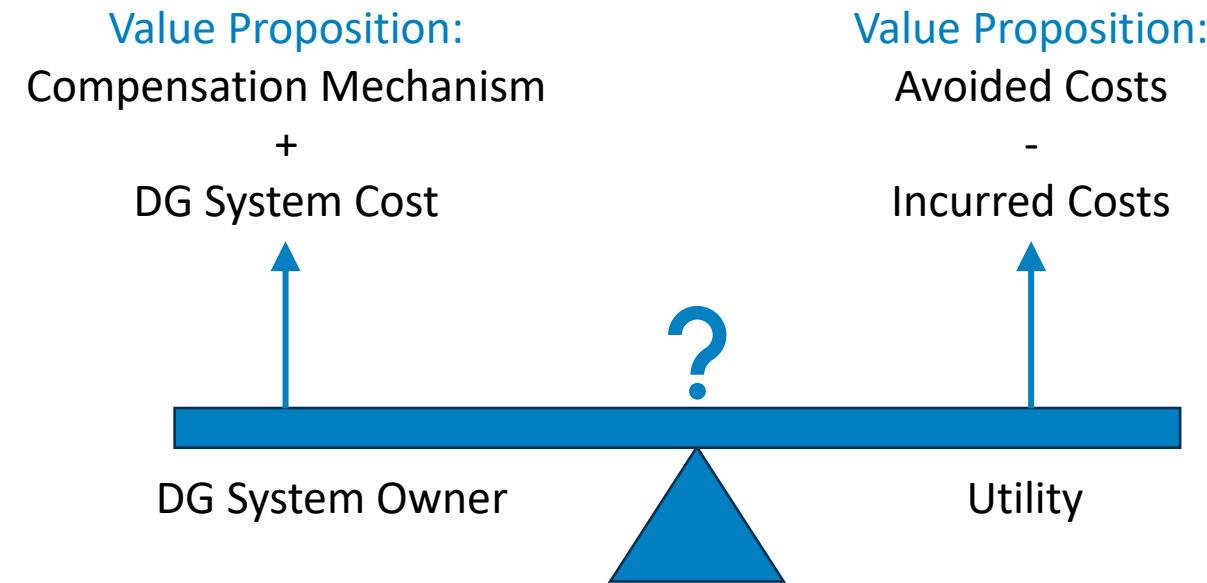
Outline

- Compensation Mechanisms
- Metering and Billing and Arrangements:
 - Net Metering
 - Net Billing
 - Buy all, Sell all
- Conclusion and Way Forward



Compensation Mechanisms

- *How DG system owners are rewarded for the electricity they self-consume and/or export to the grid*
- A well-designed compensation mechanism can help minimize the negative impacts and maximize the value of DG to all stakeholder groups
- Fundamental tradeoff for the DG Support Program: ‘simplicity’ versus ‘accuracy’



Components of a Compensation Mechanisms

- **Metering and Billing Arrangements:** How consumption- and generation-related electricity flows are measured and billed
- **Export Credit Design:** Exact compensation for electricity exported from the DG system to the utility grid
- **Retail Rate Design:** retail tariff structure for the electricity imported from grid by the DG owner

COMPENSATION MECHANISMS COMPONENTS AND OPTIONS

Metering and Billing Arrangements

Net Metering, Net Billing, Buy all, Sell all

Export Credit Design

Flat Rates, Dynamic Rates (e.g. TOU, IBT)

Retail (Import) Rate Design

Several Options



Metering and Billing Arrangements

Metering and Billing Arrangements

- How consumption- and generation-related electricity flows are measured and billed
- Many variations in implementation design apply across the United States, Asia, Europe and Africa
- Generally one of the three metering and billing arrangements implemented, although utilities could implement more than one

METERING AND BILLING ARRANGEMENTS

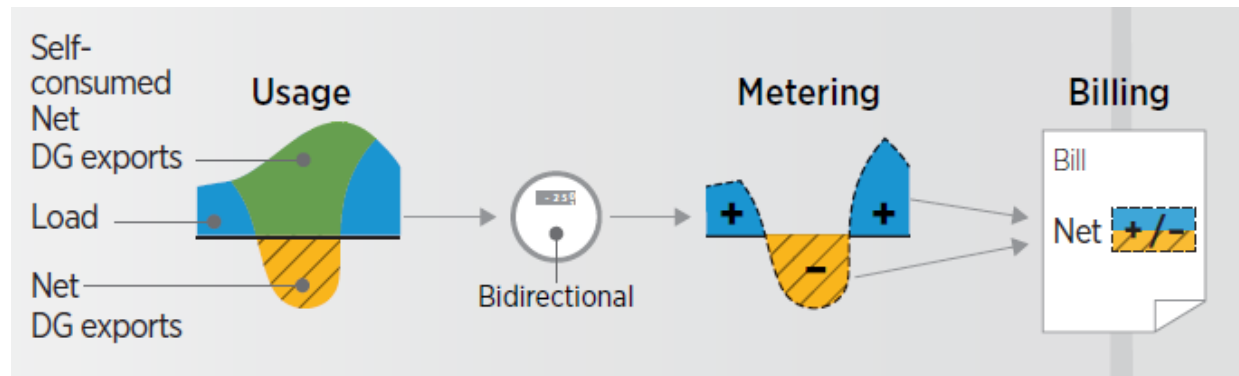
Net Metering

Net Billing

Buy all, Sell all

Net Metering

- Net metering was used by early proponents to kick-start DG markets, counting on consumers' desire to lower their electricity bills
- Compensation value at the local retail electricity rate
- Retail-parity compensation incentivizes deployment by consumers who face high retail rates



Net Metering

- Compensation rate is delinked to the actual value of DG
- Simple net metering runs counter, however, to the application of 'cost-reflective, transparent and non-discriminatory network charges
- Phasing out of net metering in USA and EU
- Gradual shift to compensation schemes that reflect closely the value of DG

Netherlands to phase out net-metering scheme in 2027

The new government coalition in the Netherlands says the nation's current net-metering scheme will be maintained until the end of 2026. The previous Parliament had rejected a proposal to cancel the scheme by the end of 2025.

MAY 16, 2024 EMILIANO BELLINI

COMMERCIAL & INDUSTRIAL PV MARKETS RESIDENTIAL PV NETHERLANDS

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Hawaii just ended net metering for solar. Now what?

October 16, 2015

By Mark Dyson, Jesse Morris

California cuts rooftop solar net metering: An industry reacts

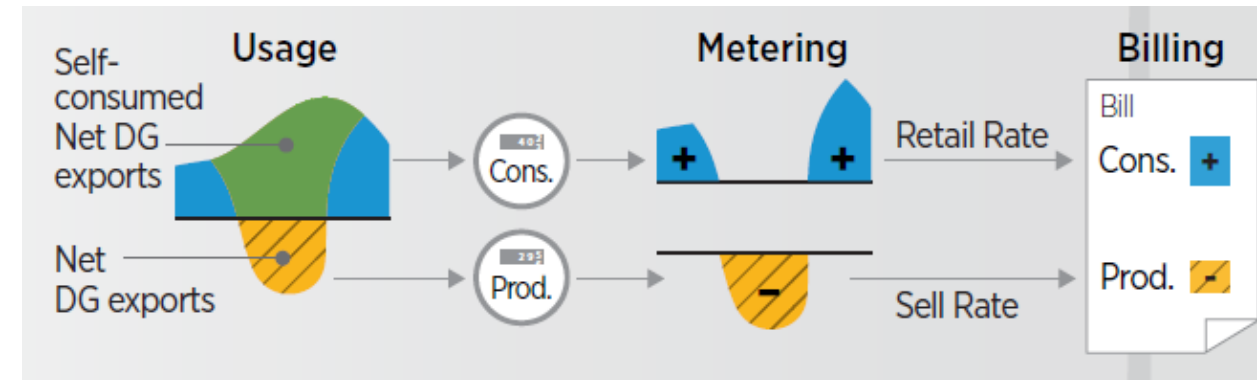
Reactions to the passage of NEM 3.0., a rulemaking procedure that reduced rooftop solar export payments by 75%.

DECEMBER 20, 2022 RYAN KENNEDY

MARKETS & POLICY POLICY CALIFORNIA

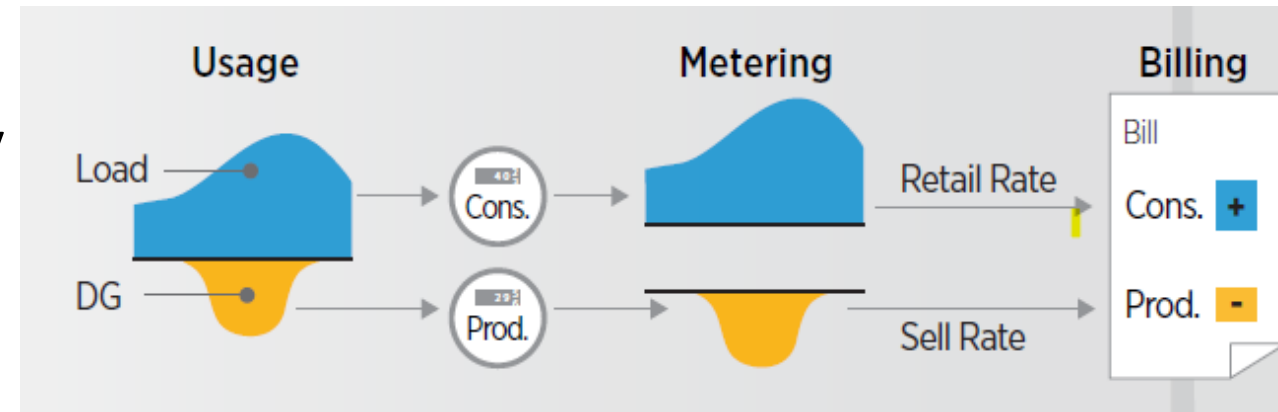
Net Billing

- Separate tariffs for electricity imported from the grid and excess electricity fed to the grid
- Excess generation is compensated at either the avoided cost rate or some other value-based crediting
- Growing trend around the world towards net billing
- Examples where implemented: South Africa, Namibia or Uganda



Buy-all, sell-all

- All electricity is exported to the utility grid, as opposed to being consumed on-site
- Standard export credit or Feed-in tariff (FiT) to a DG system owner for *all* of the electricity they generate
- Generally for large DG systems or an aggregated set of small systems
- Provide simple and predictable value propositions to both DG system owners and utilities
- Often linked to a government policy that wants to explicitly promote DG via providing long-term financial security in the form of a guaranteed feed-in tariff



Conclusion and Way Forward

- **Compensation Mechanisms:** Metering and Billing Arrangements, Export Credit Design, Retail Rate design
- **Metering and billing arrangements:** Net Metering, Net Billing and Buy all, Sell all
- The DG Support Program recommends the **net billing approach**



Thank You for Your Attention!

JOEL NANA

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