

Understanding California's Net Energy Metering (NEM) Evolution

Why California's Solar Compensation Has Changed

For nearly three decades, California has led the nation in encouraging customer-owned solar energy. As millions of solar panels were installed across the state, the California Public Utilities Commission (CPUC) periodically revised the rules governing how customers are credited for excess electricity exported to the utility grid.

The result has been three major generations of Net Energy Metering (NEM), culminating in today's **Net Billing Tariff (NBT)**.

Understanding these changes is essential for designing a solar system that delivers the greatest financial return under today's utility rates.

Timeline of California Net Energy Metering

Year	Program	What Changed	Why It Matters
1995	Senate Bill 656	California directs the CPUC to establish Net Energy Metering.	Launches customer-owned renewable energy policy.
1996	NEM 1.0	Customers receive full retail credit for electricity exported to the grid.	Solar systems could be sized to offset nearly all annual electric consumption.
2002–2012	Program Expansion	Capacity limits increased and interconnection procedures refined.	Solar adoption accelerates throughout California.
2013	AB 327	Legislature requires the CPUC to develop a successor tariff.	Begins transition toward a new compensation model.
2016	NEM 2.0	Mandatory Time-of-Use rates, modest interconnection fees, and Non-Bypassable Charges are introduced.	Retail export credits largely remain, but customers begin paying more toward maintaining the electric grid.
2020	NEM Successor Proceeding	CPUC begins a comprehensive review of solar compensation.	Attention shifts toward storage and grid reliability.
December 2022	Net Billing Tariff (NBT) Adopted	Export compensation changes from retail rates to avoided-cost values.	The economics shift away from exporting electricity and toward consuming solar energy on-site.

Year	Program	What Changed	Why It Matters
April 15, 2023	NBT Takes Effect	All new investor-owned utility customers generally enter the Net Billing Tariff.	System design now emphasizes self-consumption and strategic battery storage.

Why Did These Changes Occur?

NEM 1.0 (1996)

California's initial objective was simple:

- Encourage rooftop solar adoption
- Reduce reliance on fossil fuels
- Build a competitive solar industry
- Reduce expensive afternoon peak generation

Exported electricity was credited at essentially the same retail price customers paid for electricity from the utility.

For many homeowners and businesses, this produced outstanding financial returns.

NEM 2.0 (2016)

As solar adoption increased dramatically, utilities argued that solar customers still depended upon:

- Utility poles
- Transmission lines
- Distribution infrastructure
- Wildfire mitigation
- Public-purpose programs

while paying significantly less toward maintaining those systems.

The CPUC retained most of the benefits of Net Energy Metering but added:

- Time-of-Use pricing
- Non-Bypassable Charges
- Modest interconnection costs

Solar remained an excellent investment, although system economics became more dependent upon when electricity was produced and consumed.

Net Billing Tariff (2023)

By 2023 California had abundant solar production during the middle of the day.

As a result:

- Midday wholesale electricity values declined.
- The electrical grid became increasingly oversupplied during sunny afternoons.
- Evening demand became relatively more valuable.

Rather than paying retail rates for exported electricity, the CPUC adopted compensation based primarily on the value that exported electricity provides to the electric grid at a given time.

How Solar Design Has Changed

Program	Recommended Design Philosophy
NEM 1.0	Maximize annual production. Larger systems generally produced greater savings.
NEM 2.0	Size systems to offset annual usage while considering Time-of-Use pricing.
Net Billing Tariff (NBT)	Maximize on-site consumption, minimize lower-value exports, and consider battery storage when financially justified.

What This Means for Commercial Customers

Today's commercial solar design is no longer simply about installing the largest system that fits on the roof.

Instead, successful projects begin with understanding how the facility actually uses electricity throughout the day.

At Light Ray Electric, we analyze interval usage data, utility rate schedules, building operating hours, and available roof area to identify the system size that delivers the strongest financial return. Rather than maximizing exports, our goal is to maximize the amount of solar energy consumed directly by your business.

For many commercial facilities, this approach results in shorter payback periods, greater long-term savings, and a system that is optimized for today's utility tariffs—not yesterday's.

Our Design Philosophy

Every commercial project begins with a simple question:

"How can we maximize the value of every kilowatt-hour your solar system produces?"

That answer depends on your utility tariff, operating schedule, electrical demand profile, available tax incentives, and long-term business objectives—not simply on how many solar panels fit on your roof.

By designing around your actual energy usage rather than maximizing system size, we help businesses capture the greatest economic benefit available under California's current Net Billing Tariff.