



When is Energy Storage Eligible for the 30 Percent ITC?

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By Susan Kraemer, Correspondent

Near the end of 2015, the IRS quietly put out a [request for comments](#) to update a little known rule on storage eligibility for the 30 percent Investment Tax Credit (ITC). The timing seemed odd, with the ITC about to expire. But, the IRS must have been privy to what congress was about to do, in passing the Christmas Miracle of a five-year ITC extension at 30 percent.

With an updated rule, clarifying when an ITC applies to storage, the solar-plus-storage market could experience the rapid expansion that the solar market experienced in the last decade.

"A new ruling from the IRS will provide clarity needed to unlock the solar + storage industry," said Jigar Shah, former SunEdison CEO and now Founder of Generate Capital, financing Commercial & Industrial (C&I) \$0-down renewable energy upgrades.

Batteries had been eligible for the 30 percent ITC, as *Renewable Energy World* [reported in 2013](#), under certain little-known guidelines set by the IRS in 2013. But it was unclear what percentage of storage was eligible.

Over the last few years, companies had been asking the IRS for clarifications for private letter rulings of how much of a storage project is eligible for ITC when some of the energy it stores is from the grid, not a solar project.

When *Renewable Energy World's* Jennifer Runyon hosted a [webcast on the IRS rules regarding when storage is eligible](#), the DNV GL presenters were overwhelmed with questions. The international certification and technical assessment body advises C&I firms considering reducing their demand charges by storing some of their PV.

For its C&I customers, DNV GL has observed average installed battery power capacity in the range of 250 kW to 500 kW. PV capacity has typically been installed at a 3-1 ratio to battery power capacity, for the most cost-effective demand management applications.

The ITC applies only to storage charged from solar. But the IRS is technology-agnostic about what constitutes storage. It doesn't have to be a battery.

The definition: "Solar energy property includes equipment that uses solar energy to generate electricity, and includes storage devices, power conditioning equipment, transfer equipment, and parts related to the functioning of those items."

What Is the IRS Rule on Two-way Charging?

Understanding dual-use property — where a storage device could be charged by the grid as well as an on-site PV system — is really key.

"The federal government does not want to incentivize people to 'arbitrage' energy from the grid," said Mike Kleinberg, Senior Consultant, DNV-GL. "You cannot charge from the grid in the evening and then discharge during the day to supplement your PV — and also qualify for the ITC, because you're not then really charging from renewable energy."

What Kleinberg described as the "75 percent cliff" has been a source of confusion among their clients.

The ITC is applied over a five-year period, but the 75 percent charging requirement cannot be averaged over those five years, or ramped up gradually. "In essence, if during year one, the taxpayer is not careful and allows too much of the electricity stored in the battery to be drawn from the grid, no portion of the energy tax credit is available for the battery regardless of the battery's mix of stored electricity in later years," he cautioned.

Also, the storage credit is limited by the percentage of renewable input. If 90 percent of the storage charging energy is derived from solar panels, then the storage is only eligible for only 90 percent of the ITC.

"Further, if the charging energy remains about 75 percent but falls below the percentage established in the first year, then a proportional amount of the tax credit claimed in the first year must be recaptured," he said.

How Can You Prevent Batteries from Charging More Than 25 Percent, and Thus Becoming Ineligible?

"This is done primarily through control of the inverters," Kleinberg said. "There's some level of site controller, or inverter controller, depending on whether you have the PV plus storage DC coupled or AC coupled."

He added that DC-coupled solar plus storage systems implies there's one inverter and it has a DC input from the PV plant and from the storage. The inverter can then route power from the DC bus directly from the PV to the storage device.

"In AC-coupled systems, both the PV and the storage have their own DC/AC converters, and a site master controller can then control when and how fast the storage is charging to ensure it aligns with PV power production," he said.

After the five-year period in which the ITC is claimed, you are permitted to allow two-way charging again. But there are still some areas of uncertainty. A storage system added later might not meet eligibility, Kleinberg said, for example.

Are Only Batteries Eligible?

Other than batteries, there are storage technologies that can be connected to a solar PV system, and in certain circumstances, would be eligible. One example is that PV can be directed to send its surplus electricity to heat a smart water heater or ceramic space heater.

"Our customers are very interested in the 30 percent ITC," said Jim Deichert, Division Manager for Off-Peak Heating at Steffes, which for 30 years has made smart ceramic space heaters that were designed to store surplus electricity as heat, typically in regions where off-peak electric rates are available and the heaters are switched on or off with a signal from the utility. They have recently been adding smart water heaters, which have two way communication, to store surplus from a solar PV system on site, for example.

"It's got software and communication to know exactly its current usage rate, what its storage capacity is, does it have capacity available for additional storage, and more," Deichert said. "Is there use for that energy in the home, and what do you do when conditions are such that you have no more storage capacity in a water heater or a ceramic heater? Is there an option to send this energy onto the grid, and if so what kind of payment are you going to get? These are decisions that need to be made, and the Steffes system provides much information to facilitate this."

Their ceramic heater takes even more into account, like the weather forecast.

"There are some additional things that come in when you talk space heating," he pointed out. "Heating need is more variable from day to day, its use not as predictable as hot. How cold is it outside today? How cold is it going to be outside tomorrow?"

However, in order to qualify for the ITC, their software would have to show that no more than 25 percent was actually coming off the grid, directed by a utility's need to offload generation. Deichert said that tabulation of daily or monthly usage could be made to compute the annual percentage of charging from the PV.

"Our system wasn't put together for the ITC," explained Deichert. "There is energy recording that our system can provide but generally that's been more so the utilities can bill accordingly, in situations where it's managed by the utility. But by sizing the water heater appropriately, you could get 75 percent from solar on site."

Lead image credit: DNV GL.

This article was updated on Feb. 18, 2016, at 4:30 p.m EST to correct details about the IRS ruling.

