



Oregon

Kate Brown, Governor



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To: Chair Jessica Vega Pederson
Vice Chair Mark Johnson
Vice Chair Jeff Reardon
House Committee on Energy and Environment

From: Robin Freeman, Associate Director, Government Relations
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Subject: **HB 2447 Market Conditions Summary**

Dear Representative Vega Pederson:

HB 2447 would provide the Oregon Department of Energy (ODOE) the authority to adjust incentives for the Residential Energy Tax Credit (RETC) based on market conditions through rulemaking for category one devices and category two devices not already having this authority.

The first part of this summary provides factors that could be used to inform market conditions for RETC category one devices. The second part describes the process ODOE has used to review market conditions and adjust the rate for solar photovoltaic (PV) systems.

Defining “market conditions” for RETC category one devices

The chart below illustrates factors that could be used to inform market conditions for RETC category one devices. Any rate adjustment would be implemented through a public rulemaking process.

Currently, incentives for category one devices may not exceed the lesser of \$1,500 or the annual savings in kilowatt-hours (or equivalent for natural gas devices) multiplied by \$0.60. Swimming pool and spa heaters have an additional restriction that the incentive not exceed 50 percent of the cost of the device, a \$0.15 multiplier per kilowatt-hour.

Using market conditions to inform adjustments to incentives, HB 2447 proposes adding a new control mechanism to program design. Statute currently requires the incentive to be the maximum allowed by statute, not the amount needed to create a successful market intervention. A device that saves 2,500 kilowatt hours per year would result in an incentive of \$1,500, regardless of the cost of the device. RETC rules also limit an incentive to no more than

the total cost of the device. A consumer could potentially receive 100 percent of the device cost in the form of a tax credit. While a full-cost incentive might cause considerable early adoption, it does support a model for long-term market transformation, or a smooth exit strategy, as the market matures.

Factors used to inform market conditions include:

Factor	Example adjustment
Savings	Evaluation of performance from installed devices could reveal greater or lesser savings than those calculated to form the initial savings estimate. Market data on energy use informs recalibration of savings and an adjusted initial per kilowatt-hour calculation.
Alignment with resource acquisition programs	Other market entities providing incentives are bound to avoided cost and other factors. RETC incentives are tied to a fixed cost per kilowatt-hour, not the avoided cost of new generation. Market parity can inform RETC incentives to align with the cost of similar programs, especially to avoid messaging that ‘ODOE savings’ have a different value than utility kilowatt hours saved. The obverse side of this is that many other factors besides avoided cost of electricity may inform the cost per kilowatt-hour used to determine RETC incentives.
Price of the device	As a product gains acceptance in the market, retail prices frequently fall due to competition and scale. Adjusting the incentive to stay within a range of strategic influence – how many dollars will move the buyer to select the more efficient option.
Installation cost	Program contractors can shift product costs and margins from device costs to installation costs. Market data from installation costs inform the baseline assumption and incremental cost. For example, if we assume a homeowner was going to install a new furnace, we do not include installation costs in the incentive. If the contractor shifts installation costs to device costs in order to maximize the incentive, the actual incremental cost is skewed.
Other costs (permits, structure alterations, etc.)	Sometimes called “soft costs”, these can be half the cost of some device installations, such as solar photovoltaic. Rather than increase incentives to reduce soft costs to contractors and consumers, we might use this market data to guide an effort to reduce soft cost. Examples would be working with another agency to facilitate expedited permitting and inspections.
Manufacturer availability	Some energy efficiency devices are initially offered by few manufacturers, and the initial cost is higher. As more manufacturers offer a product, the price may come down, and a reduced incentive would still have the same impact for buyers.
Local availability	Products that are not available locally can carry a higher cost. It may require a higher incentive as a product is introduced, with a ramp down of incentive as more product is available in local markets.
Savings in relation to cost	For example, a heat pump water heater reduces energy required to heat domestic water by about 50 percent. This could equate to a 2,500 kilowatt-hour savings in a large household. Using existing price per kilowatt-hour saved, incentive hits cap at \$1,500.

	Incremental cost might be less than \$1,000 installed. A \$1,500 incentive from ODOE would exceed the incremental cost, so the incentive should be capped by the program at actual cost.
Other available incentives	In the heat pump water heater example above, another incentive from the serving utility may be available to homeowners. RETC rules require a homeowner to subtract utility incentives from the cost of the device to calculate the tax credit, potentially reducing the tax credit by the amount of the utility incentive. Homeowner are essentially required to choose between a reduced tax credit and a utility incentive. If a homeowner pursues the maximum tax credit and does not pursue the utility incentive, the utility loses a program participant and subsequent savings accounting and program relationship.
Market bearable cost	This factor is the theory that market cost for incented devices tends to rise to meet the amount the homeowner will comfortably bear. For example, ductless heat pump installations for RETC average about \$3,500. In other programs where 100 percent financing is available, average costs could be double that amount. It appears the attraction of financing can put upward pressure on overall cost. Adjustment to market bearable cost would likely entail a cap on an incentive.
Early retirement of device/Replace on fail	Furnaces and water heaters are usually replaced when they fail. This is a bad time for homeowners to make informed decisions about energy efficiency upgrades. An incentive targeted to replace a device prior to failure would capture extra savings and be a better time for market intervention.
Market penetration	When a product gains significant traction in the market, prices come down and incentives can be adjusted accordingly as they are phased out.
Non-energy feature cost adders	For example, an incentive on a ductless heat pump could be for a basic model with standard features. Homeowners could decide on their own for increased comfort and convenience features, the cost of which could be excluded from the incentive calculation.
Non-energy benefits	Part of the 50 percent incentive guidance is to the non-energy benefits homeowners enjoy from the device purchased. The intrinsic value of a water heater, for example, is a ready and adequate supply of hot water. The energy savings from the device are likely a secondary benefit to the homeowner.

Solar Photovoltaic Systems Review of Market Conditions

Oregon Laws 2011, chapter 730 (HB 3672) gave ODOE statutory authority to adjust the RETC rate for solar photovoltaic (PV) systems based on market conditions. Over the last three years, ODOE has used that authority to meet with stakeholders to discuss market conditions, such as system component and installation costs, number of installations and availability of other incentives. As a result of those meetings and analysis of the market, ODOE has reduced the rate.

RETC Solar Photovoltaic Rate

The RETC rate for solar photovoltaic systems is calculated by multiplying the RETC rate (in dollars per watt) by the nameplate capacity of the system (in DC watts). The maximum value of the credit is statutorily limited to \$3 a watt up to \$6,000 not to exceed 50 percent of project cost.

Market Analysis

The cost of solar photovoltaic systems, conventionally represented in terms of dollars spent per watt installed, has declined significantly in recent years. In 2008, the average cost of a residential solar photovoltaic system in Oregon was \$9.00 per watt. The average cost of residential projects in 2013 was \$4.80 per watt with 10 percent of the projects priced below \$3.90 per watt. Over the same period, the average size of individual residential systems has nearly doubled from 2,600 watts in 2008 to more than 5,000 watts today.

The combination of federal, state and utility incentives has helped to accelerate demand, reduce the price and increase the number of solar energy projects in the state. While there has been considerable transformation of the market, Oregon's residential solar photovoltaic industry is still dependent upon incentives. Uncertainty in the future of these incentives may cause disruption to the market. There is currently a Federal investment tax credit valued at 30 percent of system cost that is set to expire on December 31, 2016. RETC is scheduled to sunset on January 1, 2018.

RETC Rate Analysis & Stakeholder Outreach

In 2012, ODOE proposed to lower the rate from \$2.10 to \$1.95 a watt based on market conditions. ODOE discussed this proposal with stakeholders at five meetings around the state (Boardman, Eugene, Portland, Redmond and Salem). At the meetings, ODOE staff discussed market conditions for the solar industry and listened to stakeholder concerns and suggestions. Based on these discussions with stakeholders, ODOE decided not to change the solar tax credit rate based on the reduction of other incentives and the introduction of leased systems.

In 2013, ODOE used a similar approach to assess solar market conditions and proposed lowering the rate from \$2.10 to either \$1.90 or \$1.70 a watt. ODOE held four meetings around the state (Central Point, Eugene, Portland and Salem). At the meetings, ODOE staff discussed market conditions for the solar industry and listened to stakeholder concerns and suggestions. In discussion with stakeholders, ODOE reached agreement on lowering the rate to \$1.90 a watt, which became effective January 1, 2014.

In 2014, ODOE reevaluated market conditions and created a solar photovoltaic rate policy framework in which to systemically determine when the rate should be lowered and by how

much. The market condition analysis looked at the continued decline in system costs and increase in average system size. ODOE staff presented this framework at five public meetings around the state (Bend, Central Point, Eugene, Portland and Salem). During this round of public meetings, ODOE reached agreement on lowering the rate to \$1.70 a watt, which became effective January 1, 2015.

RETC Solar Photovoltaic Rate Policy

The goal of the solar photovoltaic rate policy is to minimize the number of projects with tax credits that are limited by the 50 percent of cost cap. As the system costs per watt decreases, more RETC solar photovoltaic projects become limited by the 50 percent of cost cap, rather than the overall maximum tax credit of \$6,000. Solar photovoltaic projects limited by the 50 percent of project cost cap may result in project costs increasing to maximize the incentive.

During tax year 2013, 99 percent of PV systems that applied for RETC received the maximum tax credit of \$6,000. Only 8 out of 1,047 projects were impacted by the 50 percent of project cost cap, resulting in less than 1 percent of the program was impacted by the RETC dollar per watt rate.

The solar photovoltaic rate policy aims to keep the percentage of projects impacted by the 50 percent of project cost cap to about 1 percent of the program. Keeping the percent of projects impacted low aims to maximize project size by increasing the size of the solar photovoltaic project needed to maximum the tax credit. This helps to ensure ODOE is not supporting a policy that inadvertently supports higher system pricing. With the system costs coming down, ODOE lowered the rate in 2015 to \$1.70 a watt in order to maintain only about 1 percent of projects affected by the 50 percent of project cost cap.

The RETC solar photovoltaic rate will continue to be evaluated on an annual basis with the goal of making frequent small adjustments in a transparent manner to minimize negative impacts to the solar photovoltaic market.

Please contact Robin Freeman if you have additional questions.