The Electricity Journal xxx (2016) xxx–xxx

Contents lists available at ScienceDirect

The Electricity Journal

journal homepage: www.elsevier.com/locate/electr

Emerging shadows in national solar policy? Nevada's net metering transition in context

Lincoln L. Davies, Associate Dean for Academic Affairs James I. Farr Professor of Law Presidential Scholar[a,*],
Sanya Carley, Associate Professor and Chair Policy Analysis and Public Finance Faculty Group[b]

[a] University of Utah S.J. Quinney College of Law, United States
[b] School of Public and Environmental Affairs, Indiana University, United States

ARTICLE INFO

Article history:
Available online xxx

Keywords:
Net energy metering
Solar photovoltaic
Distributed generation
Nevada

ABSTRACT

Nevada's recent overhaul of its net energy metering policy, which instituted a new net billing program in its place, underscores two key insights. First, decisions about *whether* net metering should continue separate from the *design* of a given program. From an institutional perspective, legislatures are best equipped to answer the first question; PUCs have comparative expertise on the second. Further, as net metering policies are likely to become more diverse across states over time, it is critical to maximize policy stability by using—rather than abdicating—grandfathering for existing customers.

1. Introduction

In December 2015, the Nevada Public Utilities Commission (PUC) issued its much-anticipated net metering decision. Nevada's PUC chose to restructure the way that net metering functions in the state. It decreased the amount of compensation offered to homeowners and businesses using rooftop solar and imposed heavy charges on them for their use of the electricity grid.

Immediately, stakeholders asked whether Nevada's decision was a harbinger of more changes to come. As one observer noted, Nevada's decision "turned ratemaking into national news," and raised the question whether "other states follow in [Nevada's] footsteps" (Pyper, 2016). The question is legitimate. Does Nevada's overhaul of its policy mark the beginning of the end for net metering in the United States?

For decades, net energy metering, or "net metering" (NEM), has served as the leading state-level policy to promote distributed solar energy in the United States. Shortly after Congress passed the Public Utility Regulatory Policies Act of 1978 (PURPA), states began using net metering to encourage rooftop solar and other small-scale energy applications. Ever since, a hallmark of these laws has been their provision of a credit—at the full retail rate of electricity—for excess energy produced by photovoltaic (PV) panels and other qualifying equipment. It is accepted in the literature that this fiscal compensation is what makes NEM laws effective at promoting small-scale solar resources (Baker-Branstetter, 2011; Del Chiaro and Gibson, 2006). The decision, then, of one of the sunniest states in the Union to remove this fundamental feature of its net metering law garnered instant attention from the media, the solar industry, and state policymakers.

Of course, Nevada's shift away from traditional net metering did not occur in a vacuum, and an understanding of other ongoing market and policy trends is necessary to put Nevada's decision in context. It is a considerable understatement to note that the primary trend in the solar energy industry over the last decade has been one thing: change. On the heels of Germany's—and other countries'—pioneering policy efforts, and China's burst onto the PV manufacturing scene, solar module prices have plummeted while installations have skyrocketed. In 2015 alone, the world added 50 GW of PV capacity, increasing the aggregate total to 227 GW—up from a mere 5.1 GW only ten years earlier (REN21, 2016).

This remarkable growth has also been driven by various renewable energy policies around the world. As of 2016, 173 countries have renewable energy targets; more than 100 jurisdictions have adopted feed-in tariffs; another 100 jurisdictions employ renewable portfolio standards (RPSs) or quota

This article is derived from Sanya Carley & Lincoln L. Davies, Nevada's Net Energy Metering Experience: The Making of a Policy Eclipse?, Brookings Inst. Report, Brookings Mountain West (November 2016), some portions of which appear herein.

* Corresponding author.
E-mail address: lincoln.davies@law.utah.edu (L.L. Davies).

http://dx.doi.org/10.1016/j.tej.2016.10.010
1040-6190/

mechanisms; and 64 use tendering or competitive bidding to encourage renewable energy use (REN21, 2016). Thus, it is not simply the solar industry that is evolving but the policy landscape that shapes it as well.

The consequences of this shifting policy environment for the solar industry are complex. Governments are offering increasingly more support for solar technology. More than 50 countries now have different varieties of net metering policies. In the United States, 41 states plus the District of Columbia currently use some version of net metering (NCCETC, 2016c). Moreover, 22 states plus the District of Columbia have solar- or distributed generation-specific carve-outs or multipliers as part of their RPS policies (REN21, 2016). These numbers suggest that there is extensive support for solar PV both domestically and internationally, and that a primary way jurisdictions support small-scale PV continues to be through net metering.

Despite this widespread use of net metering, however, the shape of these laws is beginning to change. Of the 41 states that provide net metering in the United States, 10 now offer compensation at a level lower than the full retail rate of electricity. This estimate does not include Nevada or Hawaii, both of which have moved away entirely from traditional NEM (NCCETC, 2016c). These policy modifications are critical because it is well documented that one of the most important factors for promoting renewables is policy stability. Once policies begin to shift, as they have in other nations, industry often suffers, particularly if the shifts were unexpected, drastic, or retroactive in application (Davies and Allen, 2014). In Nevada, for example, multiple solar companies significantly cut jobs and some left the state altogether after the PUC's decision to abandon its net metering law. In addition, those residential customers that formerly invested in solar PV with the expectation of utility compensation for decades were faced with the specter of having to transition to the new billing scheme.

What does Nevada's choice to abandon traditional net metering mean for the future of solar policy in the United States? We posit that falling solar prices across the globe are causing policymakers to question whether they need to revise their PV support programs. While some jurisdictions, including California and Colorado, so far have chosen not to follow Nevada's lead, it is possible that increasingly more states will consider abandoning their traditional NEM policies for ones that significantly reduce compensation and also impose new types of charges on PV customers. If this occurs, Nevada's decision eventually may be recognized as a turning point for how the United States uses policy to support rooftop solar. This transition, however, if it occurs at all, is bound to be messy—politically, legally, and economically—and managing how net metering laws evolve will be a key challenge for policymakers in years to come. Particularly important will be ensuring that policies are modified only on a prospective, not retroactive, basis, and that discussions about whether the policy should exist at all are kept separate from discussions about specific rate structures for PV customers.

We explore the changing world of net metering policy in this article by first detailing the experience in Nevada. We then place Nevada's experience in a broader context of other nationwide trends. Finally, we draw several insights from Nevada's experience that other states may consider as they deliberate the future of their own NEM programs.

2. Nevada's experience: from net metering to net billing

In 2013, the Nevada Legislature passed Assembly Bill 428 (A.B. 428), which directed the Public Utilities Commission to evaluate "the comprehensive costs of and benefits from net metering in this State" (Nevada Legislature, 2013). This charge came in direct response to the rapidly growing solar industry in Nevada. By 2013, more than 3000 customers had enrolled in the net metering program of the state's primary utility, NV Energy, with 50 of the 60 MW in the program sourced from solar (E3, 2014). Projections at the time anticipated that another 234 MW of net metering capacity—nearly four times the existing amount—would be added in just the next three years (E3, 2014; Friedman, 2014). Moreover, by 2014, Nevada had spent $185 million in incentives to promote solar power (Saunders, 2014).

2.1. The E3 cost-benefit study

To assess the value of net metering in Nevada, the PUC engaged Energy + Environmental Economics (E3) to conduct a benefit-cost analysis. E3's study evaluated costs and benefits of net metering across all potential societal impacts and reached five core conclusions. First, NEM in Nevada creates a net present value benefit of roughly $36 million for NV Energy's non-NEM ratepayers. Second, on average, NEM users in Nevada pay about $0.02/kilowatt-hour (kWh) more for electricity than non-NEM users, which creates a net cost of about $135 million over the 25-year lifetime of those users' systems. Third, before 2014, net metering increased Nevada utility bills slightly. However, going forward, NV Energy bills should "decrease substantially" due to net metering, on the order of $716 million for PV systems installed through the year 2016 over their lifetime of 25 years. Fourth, net metering moderately increases electricity costs, by about $0.02/kWh, due primarily to the lower cost of utility-scale solar compared to distributed solar. Fifth, including societal benefits in the calculation "does not significantly" alter E3's other conclusions, primarily because Nevada has a 25 percent renewable portfolio standard (E3, 2014).

These findings were noteworthy. They showed that net metering generally benefits the state, including customers who do not participate in the program. However, E3 observed that all of these estimated benefits depend in part on Nevada's RPS, which affords substantial additional compliance credit to rooftop solar. If that credit is removed, the benefits of net metering diminish, and the costs rise. Likewise, E3 determined that altering electricity rates would shift how NEM's benefits are distributed. If rates include higher fixed (system) costs and lower variable (energy) costs, net metering's benefit to non-NEM users would increase from $36 million to $95 million. And, if E3's assumed cost of $100/MWh for utility-scale solar decreased to $80/MWh, "the overall economic proposition of NEM" would change (E3, 2014).

2.2. Further legislative action: S.B. 374

Though parties had some criticisms, the E3 study was generally well received, both by the public and among interest groups. The Nevada PUC adopted it and issued a report to the state legislature based on its findings (Nevada Public Utilities Comm'n, 2014a, 2014b).

In response, the legislature passed another net metering law, one that this time called for action and not just evaluation. Senate Bill 374 (S.B. 374), which became law on June 5, 2015, decreased the cap for net metering in Nevada from 3 percent of statewide peak generation capacity to 235 MW.[1] The law also empowered the PUC with new authority to "establish one or more rate classes for customer-generators" (Nevada Legislature, 2015). Further, S.B. 374 forbade the PUC, after the 235 MW cap was met, from approving NEM tariffs that "unreasonably shift costs from customer-generators to other customers of the utility." (*Id.*)

[1] Peak capacity that year was 10,485 MW (U.S. EIA, 2016).

Please cite this article in press as: L.L. Davies, S. Carley, Emerging shadows in national solar policy? Nevada's net metering transition in context, Electr. J. (2017), http://dx.doi.org/10.1016/j.tej.2016.10.010