2023-06-20_ProRate_Energy_Comments_to_UD-18-03

Before the Council of the City of New Orleans In
Re: RULEMAKING PROCEEDING TO ESTABLISH RULES FOR COMMUNITY SOLAR PROJECTS DOCKET NO. UD-18-03, FILED PURSUANT TO RESOLUTION NO. R-23-130

Prorate Energy (PRE) herein presents a solution to this problem which can actually be implemented without passing a new resolution but instead revisiting some of the assumptions that were made in the way the current resolution's remuneration formula has been implemented and taking into account current information found in the quoted references one of which was reported only last month.

Some of the details of this adjustment may appear to be too complicated for many at the speed that they are spelled out below, but the gist of what PRE is saying is that since 2019 we have been using around 20% as the Solar Resource Adequacy Percentage (SRAP) which is a key factor of the controversial formula used to determine how much is paid for Avoided Capacity Cost (ACC). Our argument is that for a number of technical reasons, spelled out below, the correct value which should be used for the SRAP could be roughly 100% and this can be done by coupling any Community Solar farm to a negligible cost Virtual Peaking Plant (VPP) of the same size. This adjustment would cause the city's remuneration from ACC to increase by about five times (5x) and will create a more than adequately hospitable environment for community solar investment when paired with Avoided Energy Cost (AEC) as it is already defined.

We believe this is a great solution to our current dilemma, and we argue that using it will move us forward to fairly compensate for the many and varied types of investments in community solar power possible in New Orleans.

Please keep reading to understand the details of how we get to a 100% value for SRAP and solve the key problem plaguing CS in NOLA.

Key milestones and most relevant history of the development of rooftop solar and community solar (CS) in New Orleans

Soon after Hurricane Katrina in 2005, the Council passed a resolution empowering rooftop solar in New Orleans by remunerating it with Net Energy Metering, the national standard of the time. This meant and still means that electricity generated in any month in excess of consumption would create a kWh bill credit that can be used to offset consumption in future bills and thus pays in $/kWh, albeit in the future, at the current retail electricity rate.

In 2006, the Council created the New Orleans Energy Policy Taskforce (NOEPTF) to help find and recommend additional home-grown or recently adopted policy ideas from elsewhere to best guide our city's energy future. Building Science Innovators (BSI) and the Alliance for Affordable Energy (AAE) joined that team and primarily cooperatively, team-led it while working just under its co-chairs, Councilperson Shelley Midura and Pres Kabacoff, CEO of HRI. Also, members of NOEPTF were our past and current Council's legal and technical advisors and probably many other organizations or corporations that are currently found on the service list of this docket.

In 2007, Community Solar (CS) was " independently invented" in New Orleans, albeit by another name, as part of the final report of the New Orleans Energy Policy Task Force, *The Energy Hawk*.[1] Within it you will find "Remote Displaced Generation" (our invented name for CS) as one of the top recommendations, but alas this recommendation was not taken up by the Council until 2018 in this docket, UD-18-03. Also named as a top recommendation but never Council-considered was "time-of-use" rates. However, also named as a top recommendation was Integrated Resource Planning (IRP); this was Council-inaugurated by 2008 and has been redone almost as often as every three years since.

In 2016, BSI, as an intervenor in the 2015 IRP docket, made three motions that introduced Customer Lowered Electricity Price (CLEP), its invention, a very innovative and no run-of-the-mill time-of-use electricity rate design, all as alternatives to what Entergy New Orleans (ENO) was promoting at the time, a 200 MW gas peaker; all three were summarily rejected. BSI sought information from Tom Stanton, Principal Researcher for Energy and Environment at the National Regulatory Research Institute. After learning about models from around the country and from Europe, BSI submitted three proposed pilot programs. All three promoted the use of CLEP. One of these proposed CLEP as THE remuneration for CS. CLEP's formula contained two remuneration parts: one for energy, a.k.a., CLEP5, and one for capacity, a.k.a., CLEPm, and asserted that both were revenue neutral, i.e., did not create cross-subsidies against other customers or the utility, but were funded out of avoidable costs of the utility that had not yet been exploited or considered. In 2020, using 2018 MISO data, the team that was escorting CLEP at that time, calculated that CLEP (which roughly equals CLEP5 + CLEPm) would have provided in 2018, almost 14% more income than NEM.[2]

Since that time, CLEP has been renamed to ProRate and its definition is much simpler to understand but CLEP's original definition proposed in 2015 is not mathematically different than what is found at the footnoted link that defines ProRate.[3]

By early 2018, New Orleans had over 45 MW of rooftop solar, but no community solar. Why? Because the first had a good remuneration and had had it for more than a decade, but CS had no Council mandated remuneration, much less a good one.

By that time CS had come to be used in tens of states and all of them employed NEM as the remuneration. CS was nationally recognized as a pathway to solar-energy-powered electricity bill discounts for all ratepayers, even for those where rooftop solar was not feasible, and in particular, could provide access to those discounts for our lowest income ratepayers. For

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[1] https://www.theregengroup.com/docs/EnergyHawk.doc,
"4.5 Revisit and Revise the Net-Metering Ordinance

- Allocate time-of-use and excess generation incentives by allowing utility customers who also provide clean, on-site distributed energy to connect to the electric grid and receive a more supportive rate credit on their electric bill for excess electric power generated
- Promote remote/displaced generation by allowing utility customers to locate and share the ownership of off-site renewable-energy generating capacity "

[2] https://www.buildingscienceinnovators.com/clep-lowers-greenhouse-gas-emissions-while-financially-benefiting-all-ratepayers.html

[3] https://www.change.org/EngageTheMarketToSlowClimateChange

example, CS had been inaugurated in Washington DC, by 2017, which much like New Orleans, has a substantial low-income population.[4]

Thus, the Council created this docket, UD-18-03, in 2018, to open that door by providing remuneration for all ratepayer subscribers to CS. However, (as better explained a few pages below) the resolution of that docket, finalized in 2019, created two remuneration methods: one which paid like NEM for low-income customers and quite another for all other ratepayers which used two avoided cost payments: an Avoided Energy Cost (AEC) payment, and an Avoided Capacity Cost (ACC) payment. This bifurcation of avoided costs into energy and capacity smelled like a good recognition and respect for the merits of CLEP, and in fact, the AEC remuneration was almost the same as CLEP5, but for reasons that have not been understood until literally, last month, ACC generated far less than CLEPm. Thus, the non-low-income ratepayer was not offered remuneration nearly as high as NEM.

Considering that in 2019 The Council passed Resolution R-23-130 to open the door to community solar in New Orleans and in the intervening four years there have been no community solar projects started, shows that there remains a genuine problem. It is our assertion that this problem lies almost completely in the way remuneration is being allocated. Simply, if no one is willing to do a job at its current compensation, we must increase the compensation for that job. Someone might argue then that if the price is too high for that job perhaps it should be left undone but in this case we believe that there are many reasons that it is in the City of New Orleans and its citizens' interests to make sure that we have Community Solar as a significant part of our energy generation. Those reasons include that i) the solution on the table creates no cross-subsidies, ii) we should diversify from burning fossil fuels to slow global warming, iii) we should encourage short- and long-term energy bill reductions for all NOLA's citizenry, and iv) we need better energy resilience. And, in fact, we believe that the passage of Resolution R-23-130 in 2019 reflects that The Council agrees with us that we should be making Community Solar a viable and growing part of our energy arsenal.

Note to the reader, the next page and half are all quotes from TNO's 23-6-15 submission to this docket.

"On March 27, the full Council for the City of New Orleans issued Resolution R-23-130, establishing an additional comment period for Docket UD-18-03 related to changes to the rules for the City's community solar program. The purpose of this additional comment period, as TNO understands it, is to address a straightforward question: What changes to the community solar rules should be made for community solar in New Orleans to succeed? It appears to be the view of some parties to this docket that the answer to that question should be, essentially, "none – the current rules are working well." That position is hard to understand, considering the track record of community solar in New Orleans. Five full years after the existing community solar rules went into effect, not a single community solar project has been developed. That record positions New Orleans as having the single least prolific Community Solar Program in the nation. "If a car doesn't start, there's a problem with the car," a citizen testified before the City Council at a hearing on March 27, 2023. "If a phone does not make calls, it is not a working phone. If community solar rules do not result in any community solar projects, those rules need to change. TNO agrees"

[4] https://solarsaves.net/first-community-solar-project-in-washington-dc/, Jan 1017.

“A key element to the success of community solar projects is for the incumbent utility to provide a Bill Credit that provides a stable and appropriately valued price signal to invest in community solar projects. … Importantly, the Bill Credit should reflect the full value of community solar to ensure that the entire range of benefits from the project are properly captured and do not result in any cross-subsidization of other ratepayers. If the Bill Credit is set unnecessarily low, participating customers will not realize savings that are sufficient to allow for project development, and the City will not experience economically justified levels of community solar growth.“

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“ 4.1 Community Solar Bill Credit Components

“Under Resolution No. R-22-76, [*which passed in 2019 as the final resolution of the UD-18-03 docket until the docket was reopened in 2022 on the request of Madison Energy Investments, but continues to stand as the current resolution pending updates*] the Community Solar Bill Credit, the local utility will apply credits to the monthly utility bill of each community solar subscriber. The calculation of these credits incorporates two key variables: avoided energy costs and avoided capacity costs, both quantified in dollars per kilowatt hour ($/kWh).

“The avoided energy costs component is based on the average of the preceding calendar year's Locational Marginal Prices (LMP), specific to the utility. The LMPs for each hour are weighted according to the projected hourly output of a standardized 1-kW_{dc} fixed array solar photovoltaic system.

“The avoided capacity costs component is based on the Midcontinent Independent System Operator's (MISO) Cost of New Entry (CONE) value for the planning year that matches the month in which the credit is issued. The formula for calculating the avoided capacity cost is as follows:

- Avoided Capacity Cost = (CONE $/kW-yr * Solar Resource Adequacy Percentage) / Annual Estimated Energy kWh. /KW-yr

“In this formula, CONE represents the estimated cost of building a new natural gas combustion turbine (NGCT) peaker within MISO's Local Resource Zone 9 for the relevant planning year. The Solar Resource Adequacy Percentage refers to the proportion of the solar project's installed capacity that can be relied upon to contribute to system peak demand. Lastly, the Annual Estimated Energy represents the energy output, measured in kWh, from a 1 kW_{dc} solar PV installation in New Orleans, as determined by the National Renewable Energy Laboratory’s PVWatts Calculator, using a standard fixed array system with a tilt and orientation typical for New Orleans.[5]

“4.2 Community Solar Bill Credit Deficiencies

[5] The physical units of Annual Estimated Energy must be kWh/KW-yr. This is obvious from two facts: PVwatts outputs annual PV production that increases directly proportional to the number of KW employed and the Bill Credit formula must output in $/kWh. Thus, the Bill Credit formula for avoided capacity cost must include the missing physical units provided in red even though they are not found in R-22-76.

"The City of New Orleans has taken a commendable step by implementing the Community Solar Bill Credit to promote the development of community solar and encourage the use of clean and sustainable technology. However, it is important to recognize that the current Bill Credit does not fully capture the vast array of benefits that solar power offers."

…"

ProRate Energy (PRE) commends TNO's submission because it places front and center and without overburdening the reader that it provides the key formula that.

1. establishes as THE means for calculating the remuneration, a.k.a., tariff, paid to a non-low-income CS subscriber, and
2. TNO rightly asserts that the way the key formula has been heretofore interpreted and calculated should be revisited today and in light of new evidence.

Here are the latest results on MISO's CONE for the zone containing New Orleans:[6]
$ 83,520 / MW-yr = $83.52/ KW-yr

Missing here is the current RA of a Solar Farm.

The PV watts calculation[7] is 1460 kWh / KW-yr installed in New Orleans.

Here is that calculation:

We will assume the RA for a solar farm is 20%.

Avoided Capacity Cost (ACC)

= (CONE $/kW-yr * Solar Resource Adequacy Percentage) / Annual Estimated Energy kWh.

= ($83.520 / KW-yr) * 20% / (1460 kWh / KW-yr)

= $16.704 / 1460 kWh

= $0.0114411 / kWh

Thus, this yields about 1.1 cent. The crucial issue is if we change the RA from 20 to 100%, the roughly one cent turns into about 5.5 cents.

Resource Adequacy (RA) and comparing the RA of a gas peaker to a virtual peaking plant (VPP) are described, quantified, and compared here:

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6 https://cdn.misoenergy.org/20211006%20RASC%20Supplemental%20Materials%20CONE%202021-2022595294.pdf

7 https://pvwatts.nrel.gov/pvwatts.php

https://www.brattle.com/wp-content/uploads/2023/04/Real-Reliability-The-Value-of-Virtual-Power_5.3.2023.pdf

Brattle's report is summarized in Utility Dive:
https://www.utilitydive.com/news/vpps-provide-same-resource-adequacy-as-gas-peakers-large-batteries-at-up-t/649570/ as
VPPs provide same resource adequacy as gas peakers, large batteries, at up to 60% less cost: study

That ProRate creates VPP's at negligible cost as explained by this video :
https://www.youtube.com/watch?v=ZVP9-seXZWg

Wolak published that a high RA is assured by pairing a solar farm with a gas peaking plant. That is, in 2021, Frank Wolak argued that to accommodate renewable energy, intermittent generators like solar or wind can be made to have sufficient "resource adequacy" to substantively contribute to grid reliability, if paired with a real peaking plant. "Long-Term Resource Adequacy (RA) in Wholesale Electricity Markets with Significant Intermittent Renewables" | NBER
https://www.nber.org/papers/w29033

Thus, we get nearly 100% RA by coupling a VPP with Solar farm and by the Council's approved formula for the Bill credit, the remuneration for the avoided capacity cost would be near $0.055 /kWh.

AEC is about 8.3 cents/kWh. because
"weighted average wholesale price for solar PV-generated electricity was $83 per megawatt hour (MWh) in 2019, more than double the price paid to producers for electricity generated by wind, fossil fuels, or nuclear."[8]

Thus, the sum of these values:
8.3 cents for avoided energy costs, and
5.5 cents for avoided capacity costs
Exceeds the current retail price of electricity sold in NOLA.

Since paying at the current retail price = at the Net Energy Metering level, has been the aspiration of most intervenors and in particular, Madison Energy Industries, ProRate is proud to have met or exceeded the needs of our community.

But what are the nuts-and-bolts consequences of this?

For Madison Energy Industries (MEI) or anyone else to be rewarded with a 100 RA it must be paired with either a real gas peaker or a Virtual Peaking Plant (VPP) of the same size.

For example, to pair a 5 MW solar plant with a 5 MW VPP made up solely of homes, you would need about one thousand homes because the "standard" peak demand per average home is between 5 and 10 KW.

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8 https://www.eia.gov/todayinenergy/detail.php?id=45436#:~:text=The%20weighted%20average%20wholesale%20price,%2C%20fossil%20fuels%2C%20or%20nuclear.

How do you get that? You create a one-thousand home ProRate Pilot, much like what was advocated by BSI in 2016, and solicit either the utility or an independent aggregator to orchestrate the VPP.

The ensemble entity: a 5 MW solar farm coupled with a 5 MW VPP has nearly 100% RA.

And thereby, the solar farm will be paid around 13.8 cents per kWh, all out of avoided costs of the utility.