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Microgrid Resources Coalition Comments on IEPR Volume 2 Draft

Additional submitted attachment is included below.

March 22, 2021

California Energy Commission
Docket Unit, MS-4
1516 9th Street
Sacramento, CA 95814

RE: Docket 20-IEPR-01 Comments of the Microgrid Resources Coalition on Draft 2020 IEPR Report Update, Volume II on Microgrids

Introduction

The Microgrid Resources Coalition (MRC) respectfully submits these comments on the California Energy Commission ("Commission") Draft 2020 Integrated Energy Policy Report Update, Volume II on Microgrids and thanks the Commission for their inclusion of microgrids in this edition of the IEPR.

The MRC is a consortium of leading microgrid owners, operators, developers, suppliers, and investors formed to advance microgrids through advocacy for laws, regulations and tariffs that support their access to markets, compensate them for their services, and provide a level playing field for their deployment and operations. In pursuing this objective, the MRC intends to remain neutral as to the technology deployed in microgrids and the ownership of the assets that form a microgrid.

The MRC's members are actively engaged in developing microgrids in many regions of the United States including many in California. MRC members have also been operating sophisticated microgrids over an extended period of time (some for over 30 years). They are at the cutting edge of microgrid technology.

The mission of the MRC is to promote microgrids as energy resources by advocating for policy and regulatory reforms that recognize and appropriately value the services that microgrids offer, while assuring non-discriminatory access to the grid for various microgrid configurations and business models. We generally support disaggregated, fair pricing for well-defined services both from the grid to microgrids as well as from microgrids to the grid. We promote community-based resilience standards and support utilities that are working toward new business models that value resilient distributed resources. We work for the empowerment of energy customers and communities.

Key comments on the Volume II Draft

- The characteristics of microgrids that are outlined in the draft IEPR are correct, but inclusion of additional characteristics is needed to paint a more complete picture of microgrid technologies and their capabilities in the final IEPR update.
- The IEPR takes a dismissive and nonchalant tone with regard to utility Public Safety Power Shutoffs (PSPS)
- There is a clear business case for microgrids already and Commission-funded projects have demonstrated how public benefits and additional value can be derived from private microgrids
- Microgrids are appropriate for addressing a multitude of challenges simultaneously that will have beneficial outcomes for both customers and the grid
- Microgrids can be a solution to California's equity challenges

The characteristics of microgrids today and in the future

The MRC agrees with the Commission's identified key characteristics of microgrids that they are comprised of local energy resources, can be independent and self-sufficient, and are adaptive.[1] The MRC suggests the IEPR also outline additional capabilities of sophisticated microgrids. Microgrids give customers the opportunity to efficiently optimize energy usage within and between connected facilities. Microgrids can optimize across load control and building management, energy imports and self-generation, electric and thermal energy, alternative fuels, and use of thermal and electric storage. Customers and communities can meet their own decarbonization and resilience goals, as well as the state's. Microgrids are dynamic resources that can evolve with technology and meet grid needs now and in the future as California moves towards 100% carbon neutrality.

The MRC would encourage the Commission to another important characteristic to the final IEPR update: *Microgrids are technology agnostic – a variety of different resources may be connected to form a microgrid.*

The IEPR seems to come to a foregone conclusion that solar and batteries are the main ingredients in a microgrid and the main problem to solve is how to get longer duration backup power from batteries. The Commission explains that it is doing research and demonstration for backup power that is cost-effective and can last for anywhere from 10 to 36 hours.[2] The report glosses over the details on exactly *how* these technologies are cost-effective and *when* they might become commercially available.

There is no acknowledgement of the role that thermal energy resources play in microgrids in the draft IEPR update. This is a significant oversight that must be corrected. As we stated in our comments on the IEPR workshop, electric and thermal energy resources have fundamentally different properties that must be recognized and considered when developing policies and regulations for microgrids.[3] Thermal energy is a much more efficient resource for heating and cooling than electric energy. It also has a significantly lower cost, as large-scale electrification of heating and other thermal applications is very expensive, especially as electricity rates continue to rise in California.[4]

Thermal energy becomes incredibly important when considering the combined power and resilience needs of facilities with extensive plumbing and large energy loads, such as healthcare, manufacturing, food processing, and water treatment facilities. Achieving significant efficiency gains in thermal energy uses with microgrids, such as those that utilize combined heat and power, waste heat recovery, or thermal energy storage, is a much more cost-effective and practical way forward than attempting to electrify some of these thermal energy uses, and it reduces overall GHG emissions. The loading order must be recognized with respect to microgrids and the energy efficiency they provide. Enabling the wider deployment of hybrid microgrids at critical facilities will allow them to become more energy efficient while achieving greater resiliency to the benefit of the communities that critical facilities may serve.

Alternative fuels like bioenergy and hydrogen appear to be an afterthought of the report. The tone of the IEPR draft suggests skepticism about these clean fuel technologies and how they can be integrated into a decarbonized energy system or clean energy microgrid. As the Commission itself stated, microgrids are adaptive. This adaptability feature is not limited to the control system, it extends to the power generation fuel source as well. Today, it is true that many hybrid microgrids have generation technologies that run on natural gas. Reciprocating engines, fuel cells, linear generators and other power generation resources that

[1] Draft IEPR report pg. 9
[2] Draft IEPR report pg. 9
[3] MRC Comments on IEPR Commissioner Workshop, July 30, 2020
[4] CPUC Rates En Banc and white paper, March 2021

are capable of running on clean fuels are largely limited to natural gas today due to the low availability and high cost of alternative fuels. Additionally, the lucrative Low Carbon Fuel Standard (LCFS) credits for biogas for the transportation sector restricts the availability of alternative fuels for power generation. If a similar program were developed for power generation, it is likely that adoption of clean fuels would increase.

The logical progression of advancing microgrid technologies should not eliminate all thermal energy solutions today when they can provide clean, long duration resiliency in a cost-effective manner to meet the real and significant challenges that customers are facing with power outages across the state. The Commission itself acknowledges how fossil fuels can balance the intermittency of renewables and extend the shelf life of diesel fuel reserves in its discussion of the Fremont Fire Station microgrids.[5] Hybrid microgrids that include both renewable and non-renewable resources reduce the need and duration of fossil fuels, while providing the resiliency and reliability that is needed to sustain a power outage.

California has ambitious *decarbonization* goals. Electrification is a means to achieve decarbonization, but electrification itself is not a silver bullet to solving our climate challenges. Our SB 100 goals should be kept in mind as the Commission develops policies and strategies for microgrids, but we are still more than 20 years away from 2045. Furthermore, SB 100 articulates zero-carbon resources, not renewable resources. The state of California has to balance long-term goals with short-term needs and make tradeoffs.

Resiliency and reliability are needs today. Microgrids that utilize some fossil fueled generation today are able to serve those needs in a cost-effective manner while continuing to make progress on the state's decarbonization goals. Longer term, fossil fuels can be swapped out with alternative fuels like bioenergy and hydrogen in the future as they become commercially available. The MRC supports the long-term goal of powering microgrids with clean energy, but the constraints of today's reality must be acknowledged and factored into the Commission's final report.

While the MRC appreciates the amount of funding that has gone into clean microgrids, we are concerned that there has been an outsized focus on solar and batteries, which are already commercially available in the marketplace. The Commission should prioritize funding for alternative fuels in its R&D efforts so that we are not limiting technology choices to only electricity resources and give clean thermal resources a chance to scale up. If the Commission continues to invest in alternative fuels and clean thermal energy solutions to commercialize these technologies, they will fall in cost and rise in commercial availability over the next two decades, enabling microgrids to meet the state's SB 100 goals by 2045.

The IEPR takes a dismissive and nonchalant tone with regard to utility Public Safety Power Shutoffs (PSPS)

The MRC is disturbed by the dismissive and nonchalant tone that is conveyed in the draft IEPR update on PSPS events. The Commission states that utilities are working to improve their grids so these events will not be an issue in the future. The report goes on further to say that microgrids are not "appropriate" to solve every problem and they must be deployed strategically.[6] It is true microgrids are not the silver bullet to every energy problem the state currently has, but they can be a multifaceted tool for enhancing reliability and resiliency at scale when sophisticated microgrids are deployed strategically at certain customer sites with electric and thermal resources that enable them to support the grid and maintain power during an outage. The dismissive tone about PSPS events demonstrates a lack of concern for the acute environmental

[5] Draft IEPR update pg. 21
[6] Draft IEPR update pg. 2-4

impacts and pollution burden that communities are facing with the skyrocketing use of diesel generation to deal with recurring outages.

As the MRC outlined in its comments on the IEPR workshop, PSPS events are costly and shift the economic and societal burden away from utilities and onto customers.[7] The disruptive and harmful nature of power outages has only been amplified during the current global pandemic where people are more likely to be isolated, working and schooling from home, and the most vulnerable populations are at higher risk of health complications. Minimizing the economic damage and negative societal impact these massively disruptive events have had on customers in this report makes the Commission appear out of touch and lacking empathy for the people of California who have suffered.

There is a clear business case for microgrids already and Commission-funded projects have demonstrated how public benefits and additional value can be derived from private microgrids

The draft IEPR update describes microgrids as being a solution for certain customers to meet clean energy and resiliency goals but that the value and benefits of microgrids are contained and not socialized more broadly. The final IEPR update should articulate more of the details as to how California microgrids provided support to communities and the grid during outage conditions. The Blue Lake Rancheria microgrid provided resiliency benefits to populations during PSPS events that were not customers of the microgrid. The Miramar Marine Corps microgrid was able to intentionally island from the grid during CAISO flex alerts to reduce demand on the grid.[8] There are many examples of how microgrids can provide public benefits and additional value to the grid beyond the individual customers that are physically interconnected to the microgrid.

Microgrids have many use cases and serve both public and private interests. One misconception that the MRC continues to note in California is that policymakers seem to view microgrids as only for backup power, which is inaccurate. Most sophisticated microgrids are designed to operate full time and optimize energy usage within and between connected facilities. This optimization of resources allows for deep energy efficiency gains while making beneficial use of electric and thermal energy and is the traditional use case for microgrids. As renewables have fallen in cost, microgrids can incorporate higher levels of intermittent resources to firm and smooth renewable output while contributing to state decarbonization goals and individual customer sustainability targets. As controls and software have continued to advance, microgrids can sense grid conditions and respond to utility price signals for energy arbitrage and grid services revenues. The business case for microgrids has existed for decades and continues to evolve and expand over time.

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[7] A study by the Manhattan Institute that examines the economic justification for initiating PSPS events finds that "from a societal perspective, the costs to individuals and businesses from preemptive shutoffs of electricity exceed the benefits gained by reductions in the likelihood of a wildfire… From an electric utility's perspective, preemptive shutoffs are economically rational. They reduce the utility's potential liability from a wildfire caused by a failure of, or damage to, electric operations equipment, even if that equipment is working properly, while the utility incurs no costs, other than lost revenues from forgone electricity sales. Hence, preemptive shutoffs are a form of low-cost insurance". The study analyzes the Value of Lost Load (VOLL) for preemptive power outages and concludes that "it is reasonable to assume a range of VOLL between $10/kWh and $20/kWh for all affected California customers. For a residential customer using about 16 kWh of electricity per day, that translates into a daily cost of between $160 and $320". The study does not quantify the impact on businesses due to the wide range of operational costs that could be considered, but it is safe to assume from other sources that the financial impacts to businesses are significantly greater. As one example, the study estimates the range of costs associated with the October 9-12, 2019 preemptive shutoff to be between $846.9 million and $1.69 billion. Stanford University estimated the costs of this same event to be $2.5 billion.

[8] https://microgridknowledge.com/california-blackouts-microgrids-flexible-load/

Microgrids are appropriate for addressing a multitude of challenges simultaneously that will have beneficial outcomes for both customers and the grid

Microgrids with flexible fuel resources can provide capacity when called upon or intentionally island from the larger grid to reduce demand and support the bulk power system. CAISO has cancelled billions of dollars of transmission projects due to DERs in the past several years resulting in a cost savings for all ratepayers.[9] As more dynamic DERs and microgrids are installed throughout California, they have the potential to reduce the need for expensive, climate-vulnerable transmission. Reducing the need for transmission saves money for all ratepayers and helps mitigate the growth of rate base that is exacerbating ratepayer affordability concerns. Not only does it reduce the direct cost of infrastructure investment, but it also helps to mitigate the costs of wildfire, PSPS and other causes of power outages that cause social and economic disruption, and disproportionately harm those that can least afford it. PSPS events are a "tool" that the IOUs have stated they will continue to utilize indefinitely. Extreme weather conditions are becoming more frequent. Transmission infrastructure is a risky and costly investment in this new era of climate change and the Commission should be exploring every opportunity to reduce the use of it. Microgrids can be a flexible demand management tool for grid operators to support real-time grid needs. Resiliency is an important benefit of microgrids, but it is far from the only benefit.

The Commission outlines numerous facilities where resiliency is important and maintaining power would serve at least one public policy goal.[10] The MRC agrees that microgrids are appropriate for all the facilities and communities identified by the Commission, but would argue that resiliency is appropriate at all facilities at some level, and it should be up to the individual customers and communities to determine the appropriate level of resilience needed and the solutions employed to achieve that level of resilience. Lifesaving services that require uninterrupted electricity, community services, vulnerable communities and "other unique energy demands" are all important for economic continuity and societal well-being. Resiliency is inherently local, and the Commission should be encouraging all customers and communities to achieve an appropriate level of energy resilience to provide security and minimize the disruptive nature of power outages that come with significant consequences in modern society.

Microgrids can be a solution to California's equity challenges

The MRC agrees that equity is an important consideration in energy policies and regulations. As outlined above, microgrids can provide benefits to all ratepayers *and* support the resiliency needs of communities and customers. There are many ways in which microgrids could be deployed strategically to support public policy goals like environmental and social justice. The MRC understands the importance of not "eroding the responsibility of all ratepayers to share in the cost of providing universal access to electric power".[11] Currently, the utilities are unable to provide universal access to electric service and the impacts are being felt disproportionately on rural and vulnerable communities. Microgrids are a solution to California's energy equity challenges and the current lack of universal access to electricity in this new paradigm of PSPS events and extreme weather putting increasing amounts of stress on the transmission system.

The development of strong price signals that do not impose punitive fees on microgrids is not eroding customer cost responsibility. On the contrary, customers are making investments in technologies and solutions that provide benefits to communities, the grid, and the environment. Punitive fees assessed on microgrids only serve to restrict access to microgrids. Limiting technology choices today further restricts access to affordable resiliency solutions that could provide meaningful benefits in the short-term. The

[9] https://www.utilitydive.com/news/efficiency-ders-saving-26b-in-avoided-transmission-costs-caiso-says/519935/
[10] IEPR draft pg. 17
[11] IEPR draft pg. 11

Commission should take every opportunity to reduce unnecessary and excessive fees for microgrids so that more communities, especially those that are vulnerable and disadvantaged, have access to microgrid technologies and resiliency solutions.

Price signals for microgrids will help to facilitate public-private partnerships and leverage private capital so that not all costs for our clean energy transition are borne by ratepayers. Tariffs and market signals for grid services and clean generation encourage private investment in the technologies and infrastructure that will help California achieve its aggressive decarbonization and climate goals with a lower return on equity than IOU spending. It is paramount that the Commission encourage the growth of customer microgrids, not discourage customers from adopting these resources if they do not fit a government-defined level of appropriateness.

The grid is important to maintain, and the utilities will continue to play a major role in the clean energy transition. Customer and community-owned microgrids are a *solution* to California's energy affordability and grid reliability challenges, not the problem. The Commission must look to customers to help with the clean energy transition and a modernized grid of the future. The state cannot just rely on the utilities. That approach will only cement ratepayers with unaffordable bills for last century's grid with old technology and aging infrastructure that is prone to causing outages and wildfires.

Conclusion

Tariffs and price signals (without punitive fees that erode the economic value proposition) give customers a reason to stay connected and support the grid of the future with microgrids, rather than defecting from it when they are able to afford and invest in technologies that serve their own energy needs. The Commission should be focused on how to *bring microgrids to every community* and encourage the design of sophisticated price signals that enable those microgrids to contribute to the larger grid and bulk power system to the benefit of all ratepayers.

Given the Commission's other work on transactive energy systems, and the recent FERC Order 2222 to enable DERs to participate in wholesale markets, California can be the host of a dynamic and flexible grid of the future with many participants contributing to its modernization and decarbonization.[12] Nurturing the growth of microgrids will allow customers to share in the cost of decarbonizing the energy system while mitigating the larger equity issue of grid defection. The MRC encourages the Commission to leverage microgrids for all their capabilities so that they may support a multitude of public policy goals such as decarbonization, community resiliency, equity, and environmental justice.

The final IEPR update should note that more Commission support is needed to achieve commercialization of a diverse suite of microgrids and resiliency solutions. R&D funding should be prioritized and distributed to microgrids that are attempting to utilize a diversity of resources, alternative fuels and other emerging technologies that are not widely commercially available in the market. Innovative financing models like energy-as-a-service can be greatly expanded to serve a wider range of customers if robust market signals are developed for microgrids to respond to. Microgrids have a strong business case and value proposition. Regulatory certainty and assurances of revenue streams for grid services will provide investors with confidence in the market knowing that California regulators are supportive of these technologies and view them as tools to achieve public policy outcomes. Conveying dismissive and skeptical tones about microgrids only hinders the ongoing growth and development of these beneficial technologies.

[12] Complete and Low-Cost Retail Automated Transactive Energy System (RATES) Energy Research & Development Division, California Energy Commission, June 2020

California cannot build an efficient, affordable, technologically advanced grid of the future with last century's technology and regulatory models. Equity and affordability should be central tenets of a new regulatory framework governing a decentralized, decarbonized, resilient grid that is built from the bottom up with customers and communities at the forefront. Microgrids are a multifaceted tool that can serve many of the state's energy needs and achieve equitable community resilience.

The microgrid industry stands ready to support the state of California with this endeavor and appreciates the Commission's work to include microgrids in this edition of the Integrated Energy Policy Report.

Respectfully submitted,

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