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To: Farmington Planning Board

Re: Response to Residents' submission

In the May 15th planning board meeting residents submitted several documents stating concerns over the solar and energy storage development planned for the Commercial Drive site. We received copies of the reports from the planning board clerk.

After careful review and consultations, including a continuing discussion with Fire Chief John Weidenborner, we submit the following report. We have grouped the submissions that are common and our response follows each group.

We look forward to continuing to work with the planning board and town staff towards the successful completion of this project.

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A: Land Use and Planning process

In Response to:

- #08 2022 MTOD and MSOD Site Design Guidelines, annotated by Grady
- #09 Chapter 165 Zoning, Article VI Special Permit Uses, annotated by Grady
- #11 Planning Board Minutes, April 17, 2024, pp. 22–55, annotated by Grady
- #16 U.S. solar expansion stalled by rural land-use protests
- #20 Chapter 165 Zoning, Article IV District Regulations

Sky Solar continues to work with the Town of Farmington staff and Planning Board to add to and improve the plans submitted for review. The current plans meet the requirement for review and Sky has undertaken to add information and plans as requested, such as view shed analysis, glare analysis and noise study. We have undertaken to review the road location and have entered into discussions with adjoining property owners for realignment of the road.

After careful review, we have determined that the articles submitted concerning agricultural zoning regulations do not apply to the proposed solar and Battery Energy Storage System (BESS) project. This determination is based on the fact that the project site is zoned for light industrial use, not agricultural. The light industrial zoning designation allows for the development of renewable energy projects, including solar and BESS installations, which are consistent with the intended use of the land under this zoning classification.

B: Property Evaluation

In Response to:

- #19 Do solar farms lower property values? A new study has some answers

Large-scale studies, such as the Laboratory Berkeley National Laboratory study conducted in 2023, have found that solar facilities had no effect on home values in half of the states studied. However, in cases where a small decrease in surrounding home value was noted, it was observed that the solar arrays were located on land previously used for agriculture, in rural areas, or for projects larger than 7MW with over 12 acres of solar panels. Notably, Sky Solar's Commercial Drive Solar projects do not meet any of these conditions.

In conclusion, we would like to emphasize the value of green energy solutions. Solar energy systems serve as zero-carbon generation systems, contributing to environmental sustainability. Additionally, solar and energy storage solutions enhance the resiliency of the grid that supplies energy to all residents and businesses of Farmington. Moreover, residents and businesses can participate in direct cost savings on their utility bills by subscribing to the energy output of the solar

project. Furthermore, the implementation of solar projects has a positive economic impact, including job creation and direct and indirect benefits to supporting and service industries located in the Town of Farmington.

C: Health Related Issues

In Response to:

- #01 Saving Greene: PFAs and other compounds in solar panels, wiring, and coatings
- #02 Environmental Research: High exposure to perfluorinated compounds in drinking water and thyroid disease. A cohort study from Ronneby, Sweden
- #03 Journal of Hazardous Materials: GenX in water: Interactions and self-assembly
- #06 Environmental Research: Inflammatory bowel disease and biomarkers of gut inflammation and permeability in a community with high exposure to perfluoralkyl substances through drinking water

While we acknowledge concerns about PFAS, they are not relevant in this case. Firstly, solar technology is evolving rapidly, with manufacturers becoming increasingly conscious of their products' environmental impacts. Efforts to develop and implement non-toxic, eco-friendly materials are ongoing. Many solar panel manufacturers are already phasing out or reducing the use of PFAS, driven by stricter regulations and heightened environmental awareness. It's important to note that PFAS are not just found in industrial products but are pervasive in everyday life. They are present in several food products and household items, making them hard to avoid. Most people encounter PFAS daily, through non-stick cookware, water-repellent clothing, fast food packaging, and even certain types of dental floss.

In the "Clean Energy in Michigan" series, concerns about PFAS contamination from solar farms are addressed. Although some academic research suggests potential PFAS use in photovoltaic (PV) solar panels, safer alternatives are typically used, and no studies have shown PFAS presence or leaching from PV panels. The confusion arises from three components: self-cleaning coatings, adhesives, and substrates. Most self-cleaning coatings use non-hazardous silicon-based chemistry, while PV panel adhesives are usually silicone-based and free of PFAS. The common polymer substrate, Tedlar, is not a PFAS compound. Solar panels present a lower PFAS exposure risk compared to materials used in construction and weather-resistant fabrics.

As the solar industry expands, so does the infrastructure for recycling and safely disposing of solar panels and batteries. Since solar panels contain valuable materials like silicon, aluminum, and glass, recycling helps recover these resources instead of disposing of them in landfills. When a solar field reaches the end of its lifespan, the panels are carefully disassembled, and their components are sorted for recycling. This not only reduces waste but also minimizes the environmental impact of solar energy production.

Effective battery recycling processes are crucial in minimizing environmental impact. Recycling lithium-ion batteries involves extracting valuable metals such as lithium, cobalt, and nickel, which

can then be reused in new batteries, reducing the need for new mining operations and lowering the overall environmental footprint. Furthermore, advancements in recycling technology are making the process more efficient and environmentally friendly.

Decommissioning plans are designed to address the recycling of site materials and efforts to restore the land to its original state. These plans ensure that at the end of their life cycle, solar installations do not leave any lasting impact. Proper decommissioning includes dismantling solar panels and associated infrastructure, recycling materials wherever possible, and safely disposing of any non-recyclable components. This comprehensive approach helps to minimize waste and promotes the sustainable use of resources.

D: Vehicle Exhaust

In Response to:

#18 The Dangers of Vehicle Exhaust

#24 Health Effects of Diesel Exhaust

The proposed project is already surrounded by a network of existing roads to the south and north and we do not believe that the proposed road will increase vehicular traffic or result in additional air pollution. However, Sky Solar does not have specialized transportation or road planning expertise and would like defer this to the town. After construction, the only vehicles that will access the project site are for maintenance purposes, expected to be one or two vehicles once per calendar quarter.

Our focus remains on developing renewable energy solutions, such as Battery Energy Storage Systems (BESS) and solar fields, which actively reduce air pollution. These systems decrease reliance on fossil fuels, lowering greenhouse gas emissions and air pollutants, and contributing to cleaner air and a healthier environment for the community. By optimizing the use of renewable energy, Sky Solar continues to support a sustainable and pollution-free future.

E: Environmental Effects of Solar Farms

In Response to:

#04 Renewable and Sustainable Energy Reviews: Environmental impacts of utility-scale solar energy

#05 Scientific Reports: The Photovoltaic Heat Island Effect: Larger solar power plants increase local temperatures

It is challenging to accurately estimate or evaluate the microclimate impact of the site. The complexity and variability of microclimate factors make precise assessments difficult. Additionally, the planned project is relatively small covering around 8 acres, and only 1 acre of impervious coverage, further complicating any attempts to measure its specific effects on the microclimate.

This combination of factors underscores the inherent uncertainties in predicting localized climate impacts for this project.

Any urban development replacing vegetation has the potential to create microclimates, creating impervious surfaces that can retain heat. However, solar farms such as the proposed project allow for the planting of natural vegetation under the array (agrivoltaics), helping to maintain the existing local climate, wildlife habitats and preserving soil integrity. Solar panels can also help mitigate urban heat island effects by reflecting sunlight and heat away from the ground, which can lower temperatures in the immediate vicinity of the solar farm compared to built-up areas like roads or buildings.

F: Environmental Effects of Energy Storage

In Response to:

#07 Process Safety and Environmental Protection: Environmental pressure effects on thermal runaway and fire behaviors of lithium-ion battery with different cathodes and state of charge

#12 An expert talks solar battery farms, how they work and the risks

#13 New York battery storage owners may face new safety rules after fires

#17 Citizens for Responsible Solar

#21 Safety of Grid Scale Lithium-ion Battery Energy Storage Systems

#22 Journal of Hazardous Materials: A comprehensive investigation on the thermal and toxic hazards of large format lithium-ion batteries with LiFePo4 cathode

#23 Journal of Loss Prevention in the Process Industries: Assessment of the explosion risk during lithium-ion battery fires

Sky Solar has made a deliberate decision to collaborate exclusively with Tier 1 battery storage suppliers, named CATL, renowned for their cutting-edge and fire-conscious technology. CATL, the largest battery manufacturer in the world, supplies batteries to both the electric vehicle market and energy storage sectors, and their products have undergone rigorous safety testing and certification. Notably, CATL has a record of zero fire incidents in the USA, underscoring the reliability and safety of their systems.

Our chosen hardware is tested using LFP (Lithium Iron Phosphate) chemistry known for its safety features. The commitment to safety includes strict control of thermal runaway within the initiating cell, adopting scientific development systems, and applying anti-flammable materials throughout. The liquid-cooled LFP battery rack meets stringent safety standards, making it a reliable choice for renewable energy applications. Various safety features are incorporated at different levels: modules have venting and a fuse, racks have two fuses, and the system includes two heat sensors, three smoke detectors, two hydrogen detectors, and seven aerosols in each container (totaling 500 grams of aerosol).

Moreover, Sky Solar has engaged with ESRG, a specialized firm dedicated to BESS (Battery Energy Storage Site) fire safety. ESRG's team, which includes former FDNY firefighters. Their expertise and rigorous assessment processes help us maintain the highest safety standards and mitigate potential fire risks effectively.

The BESS system chosen for our project has been certified with UL9540 and UL9540A standards. In simple terms, UL9540 certification ensures that the system meets stringent safety and performance standards for energy storage systems. This includes comprehensive testing of the system's electrical, mechanical, and environmental performance, ensuring it operates reliably and safely under various conditions. The UL9540A certification specifically addresses fire safety by evaluating the system's ability to prevent and manage thermal runaway events, which are critical in mitigating fire risks. This involves rigorous testing to assess how the system handles overheating and prevents the spread of fire. The certification process includes tests on individual cells, battery modules, and the entire system to ensure all components work together safely. No propagation is observed according to UL9540A standards.

In addition, Sky Solar has partnered with Stem Energy, a leading (NASDAQ: STEM) energy management company, with over 5000 MWh of energy storage projects under daily management. The solutions offered by STEM will further enhance our daily control, monitoring and safety capabilities.

In conclusion, Sky Solar's strategic partnerships and rigorous adherence to safety standards exemplify our dedication to deploying the most advanced and secure battery energy storage systems. By working with industry-leading suppliers and ensuring all systems meet or exceed stringent safety certifications, we are committed to enhancing the safety, reliability, and sustainability of our energy storage solutions. This approach not only protects the community but also promotes a cleaner, greener future through the integration of cutting-edge renewable energy technologies.

G: Fire incidents in New York

In Response to:

- #10 Fires at New York Battery Energy Storage System Facilities Ignite State Response
- #14 Solar farm fire in Upstate New York sends possible toxic smoke billowing into surrounding community
- #15 Questions remain after Jefferson Co solar farm battery fire

There are over 5000 energy storage systems installed in NY State (tracked by NYSERDA) ranging from residential size to commercial to utility scale. Even though incidents are rare, fire safety is of the utmost importance.

In 2023, there were three reported fires involving energy storage systems. The first occurred in East Hampton, NY, where the cause remains unknown, but the ESS fire suppression system successfully extinguished the fire. The second incident took place in Warwick, NY, where a fire was caused by a

short circuit resulting from a container manufacturing defect. The third fire happened in Lyme, NY, due to a mechanical failure.

On July 28, 2023, Governor Kathy Hochul announced the establishment of an Inter-Agency Fire Safety Working Group to address safety concerns related to energy storage systems in New York State. This decision followed the fire incidents in Jefferson, Orange, and Suffolk Counties mentioned above. The Working Group, comprised of various state agencies, was tasked with conducting inspections of energy storage sites, preventing future fires, and ensuring emergency responders were adequately prepared. Collaborative efforts led by the New York State Division of Homeland Security and Emergency Services were instrumental in responding to these incidents, conducting air monitoring tests, and investigating the causes of the fires.

On December 21, 2023, Governor Hochul released initial findings from the Working Group, indicating significant progress in evaluating fire safety standards and practices for battery systems. The analysis revealed no reported injuries and no harmful levels of toxins detected at the fire sites. Ongoing statewide assessments of battery system projects and fire code reviews continue to inform safety measures.

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C	#03	Journal of Hazardous Materials: GenX in water: Interactions and self-assembly
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E	#05	Scientific Reports: The Photovoltaic Heat Island Effect: Larger solar power plants increase local temperatures
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D	#18	The Dangers of Vehicle Exhaust

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