



FACT SHEET: SOLAR ENERGY

SOLAR ELECTRICITY: ROOFTOP VS. UTILITY SCALE GROUND MOUNTED SYSTEMS

Solar panels that capture the sun and convert it to electricity can range in size from rooftop panels on individual homes to large industrial ground-mounted systems. Rooftop panels can produce enough energy to cover much of, or sometimes all of, a single household's energy needs. The electricity is used on site. On the other hand, utility scale ground-mounted solar consumes acres of land and connects to transmission lines to feed the electricity into the regional power grid where it is used by consumers who can be hundreds of miles away.

Roof-top solar can provide 80% of US energy needs. However, big corporations seeking to maximize profits can make more money building large ground-mounted systems than rooftop solar. Massachusetts' energy subsidies are misdirected to large privately owned corporations building ground mounted systems. This consumes our forests and farmland unnecessarily. Over 4,000 acres of forests in Massachusetts have been consumed by solar and another 100,000 acres are targeted

<https://www.massaudubon.org/our-conservation-work/advocacy/alternative-energy/solar> ;
https://www.youtube.com/watch?v=FjXY9_TYzDY

SOLAR BATTERY STORAGE: DANGERS

Solar electricity generated during the day can be stored in the batteries for use at night or on cloudy days. Massachusetts' SMART solar program requires batteries for solar projects over 500 KW, or enough energy to power between 70 and 80 homes, and smaller projects are incentivized to install batteries. While batteries help store the solar energy, they present safety hazards that are often overlooked when the facilities are approved by local governments. The batteries can leak toxic materials onto the ground. The most common storage battery contains lithium ion, which is highly reactive with water and can spontaneously combust if exposed. These potential **explosions and fires** require specialized firefighting equipment and training for first responders.

<https://www.azcentral.com/story/money/business/energy/2020/07/27/aps-battery-explosion-surprise-new-report-findings/5523361002/>;
<https://nj.gov/health/eoh/rtkweb/documents/fs/1119.pdf>

In towns like Wareham and Carver, solar storage batteries are being installed in residential neighborhoods without adequate disclosure of the safety risks or conditions for dealing with a fire or explosion. These batteries are never inspected for quality and require no quality standards.

These batteries, alongside **hundreds of thousands of industrial solar panels** in Carver and Wareham alone, pose hazardous waste issues for the future. Local municipalities are not prepared to deal with all of this waste. Where will all of these panels and storage batteries go?



Freemaq PCS industrial Storage battery at 160 Tihonet Rd. in Wareham

NOISE IMPACTS

Many municipalities allow large solar projects to be built in residential neighborhoods-often only feet from homes. These projects generate noise from the production of electricity, batteries, air conditioners to keep the batteries cool, and other industrial equipment. When multiple projects are in the same neighborhood as in Wareham, the noise can be compounded. The proposed 27-acre Con Edison solar project for Fearing Hill, Wareham will be across the street from the 12-acre Clean Energy Collective solar site on Squirrel Island Road.

The Massachusetts Department of Environmental Protection (DEP) regulates noise levels for solar. The levels cannot exceed ambient background noise by more than 10 decibels (dB(A)) over pre-development. <https://www.mass.gov/files/documents/2018/01/31/noise-interpretation.pdf>

Municipalities can impose stricter noise limits. The Town of Buckland, MA limits industrial noise emissions from solar projects to no more than 5db(A) and 5db(C) over the ambient noise pre-solar. https://www.town.buckland.ma.us/sites/g/files/vyhlif356/f/uploads/zoning_bylaws_updated_2-7-2021.pdf

SACRED NATIVE AMERICAN SITES DESECRATED

Massachusetts is the ancestral land of Native Americans who lived here for thousands of years before the Pilgrims landed. Their settlements, workshops, ceremonial and burial sites are located throughout the state often under layers of earth. The Massachusetts Historic Commission (MHC) and environmental agencies are allowing the reckless destruction of sacred sites by solar developers. This includes the desecration of King Philip's Cave in Freetown (Borrego Solar, 2016), destruction of a ceremonial cremation site in Hopkinton (Grasshopper Energy, 2021) and countless other sites that MHC determined to have "no research value" to the state archeologist -- even though these might be significant cultural and spiritual sites to Native Americans themselves. The Blue Wave Solar project in Northfield is planned for a site where there are five known Native American sites. MHC operates behind closed doors, with no transparency, no public hearings and no opportunity for public comment. This is unlawful and violates the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) by failing to protect these sites.

https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf

DAMAGE TO WATER QUALITY, WETLANDS AND RIVERS

Cumulatively and individually, large solar projects are having a negative impact on water quality and wetlands. Stormwater runoff rates increase after the sites are cleared of trees and vegetation. The protective forest, root systems and vegetation that filter groundwater are gone. Projects routinely get permits from local conservation commissions allowing them to fill and alter wetlands and riverfronts and they are being built in floodplains. In Carver, solar developers AD Makepeace and Borrego Solar **filled more than half an acre of a river front** for a 40-acre solar project; a portion of the project is in a floodplain.

In 2021, the Massachusetts Attorney General's office penalized a Pennsylvania solar company **\$1,140,000** for polluting water and damaging wetlands in Williamsburg, MA.

[https://www.gazettenet.co/Developer-to-pay-\\$1-14-million-for-wetlands-stormwater-violations-38651958](https://www.gazettenet.co/Developer-to-pay-$1-14-million-for-wetlands-stormwater-violations-38651958)

New Jersey solar company, CS Energy LLC, and Eversource were **penalized \$310,000** for the same thing. <https://www.insurancejournal.com/news/east/2021/04/20/610746.htm>

Smaller unaddressed violations are actively happening across the state.

BIODIVERSITY

Massachusetts regulators are giving solar developers permits to kill plants and animals protected under the Massachusetts Endangered Species Act and allowing them to destroy their habitats. These permits are given behind closed doors without a public process. For example, in Carver and Wareham, AD Makepeace and Borrego Solar have received about 10 permits from MassWildlife. In 2016 MassWildlife granted AD Makepeace a Conservation and Management Permit (CMP) to "take" -- that is, kill -- **12 endangered, threatened or special concern species to build a 50-acre solar project on priority habitat in Wareham; now they have applied to amend the permit to build another 70-acre solar project on abutting priority habitat.**

Globally, about **one million species face extinction** within decades if current trends continue. **Should Massachusetts "green" energy subsidies be used to cause the extinction of our plants and animals?**

Not only do ground-mounted solar projects themselves harm biodiversity when put in the wrong location, but mining for rare earth materials like cobalt and lithium that are used to make the panels contributes to extinction. The United Nations warns that "renewable energy" has impacts on biodiversity and ecosystems and should be developed with caution -- not recklessly like in Massachusetts.

https://ipbes.net/sites/default/files/inline/files/ipbes_global_assessment_report_summary_for_policymakers.pdf

EVADING ENVIRONMENTAL REVIEW

The Massachusetts Environmental Policy Act (MEPA), Chapter 30, Section 61 says that large projects have to undergo an environmental review in order to avoid or mitigate "Damage to the Environment."

The purpose of MEPA is to provide the public with a “meaningful opportunity” to be heard and weigh in on the impacts of a project. The MEPA Office, charged with implementing the law, erroneously claims that big solar projects don’t require an environmental review. This is allowing these projects to be built without public participation and behind closed doors. This is illegal.

MUNICIPAL SOLAR BYLAWS

Almost all Massachusetts municipalities have solar bylaws -- local laws that govern the size, location and operation of solar energy systems. These laws allow public officials to use their decision-making power to regulate solar systems by protecting the public health, safety and welfare of citizens. In addition, they have zoning authority under the state’s Zoning Enabling Act. General Laws, Chapter 40A. Section 3 of Chapter 40A says a municipality cannot unreasonably regulate solar energy systems....The Massachusetts Attorney General has approved many strict zoning Bylaws that regulate solar, finding them consistent with Chapter 40A Section 3. One of the strictest bylaws is the Town of Buckland solar bylaw. Municipalities have broad authority to regulate solar and if they have concerns about the impact of solar on real estate values, water, forests, and the public health, safety and welfare, they can and should exercise the full extent of their authority to adopt strong solar siting bylaws.

<https://www.mass.gov/guides/massachusetts-city-and-town-ordinances-and-bylaws>

It is no coincidence that underserved communities like Wareham and Carver have weak solar bylaws, allowing big corporations to develop hundreds of acres in residential neighborhoods into industrial solar. Upscale municipalities on the other hand, have effectively banned large industrial solar. Why should poorer communities be bearing the burden of the state’s “green energy policy” in this way?

WAYS TO CONTROL SOLAR

Urge your municipality to enact a strict solar bylaw if it hasn’t already. Encourage solar on rooftops and abandoned industrial lands. Get involved in planning board, zoning board and conservation commission meetings when solar developers file permits. Let your local officials know what you think!

Urge the state MEPA office to require the Department of Energy Resources to conduct environmental reviews for land-based solar projects.

Sign our moratorium petition.

Encourage low impact development and green infrastructure throughout the state.

<https://www.massaudubon.org/our-conservation-work/advocacy/shaping-climate-resilient-communities/publications-community-resources/workshop-presentations-archive/lid-and-green-infrastructure>

Save The Pine Barrens, Inc.

www.savethepinebarrens.org; www.savemassforests.org