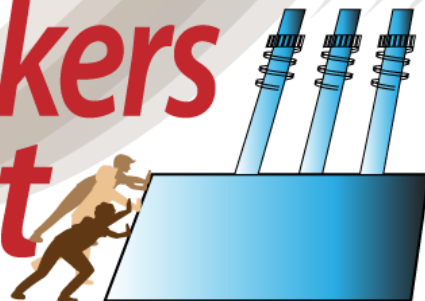


Put Peakers in the Past



*An initiative of
Berkshire Environmental Action Team*

*Campaign to get peaker power plants to transition
to battery storage and renewables.*

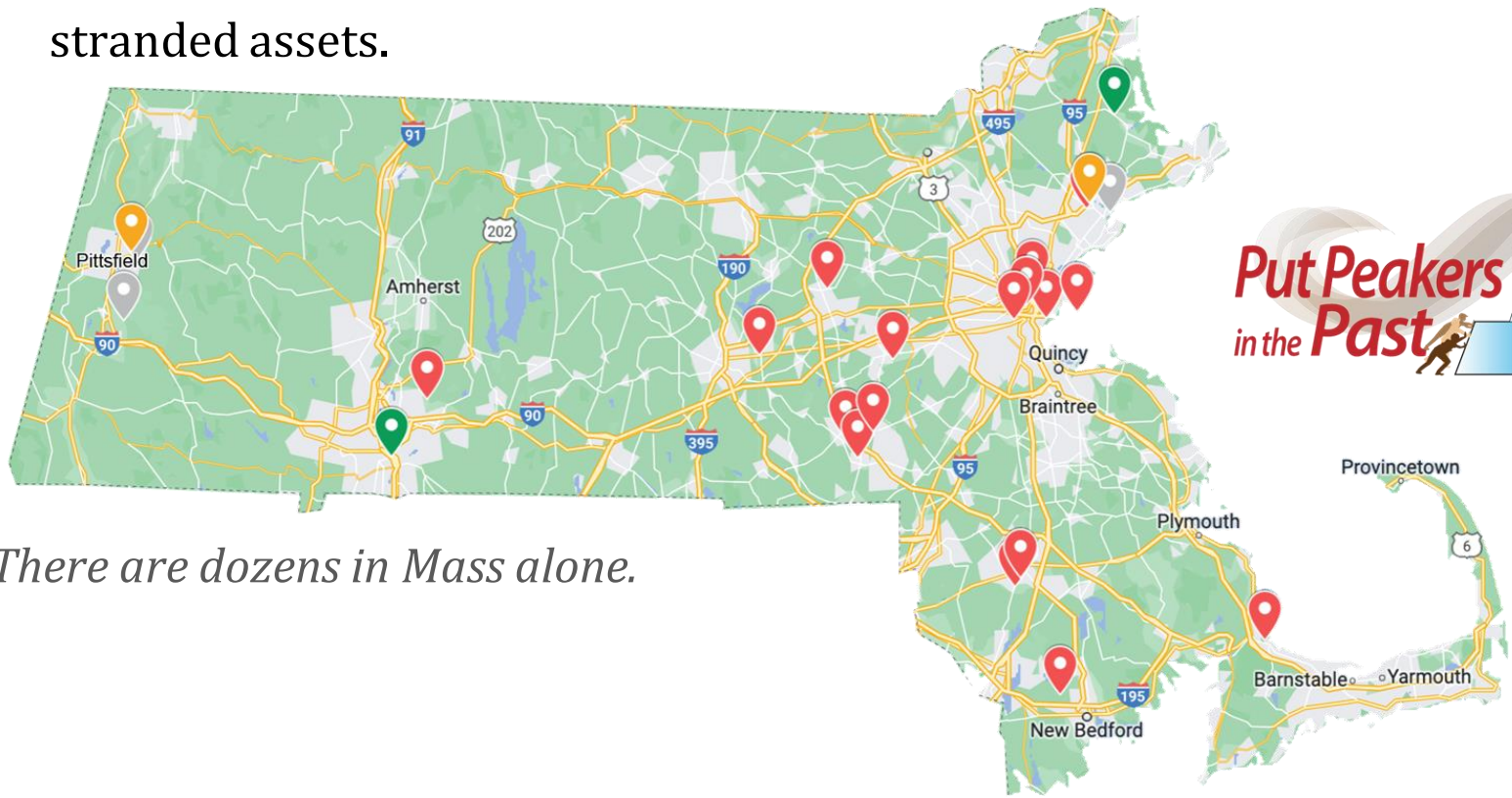
- Started a few years ago focusing on Berkshire County peakers
- Now building statewide campaign along with coalition members:
 - Massachusetts Climate Action Network
 - Slingshot
 - Clean Energy Group

Why fossil fuel peaker plants are a problem



— **Peaker plants are highly impactful**

- More than half of them are over 50 years old
- Inefficient, high pollution per MW of useful power produced
- Long start-up and shut down periods for short demand periods
- New peakers such as Peabody's 2015A are likely to end up stranded assets.



There are dozens in Mass alone.

Health Impacts of PM and NO_x air pollution



Burning fossil fuels has local health impacts

- Effects are:
reduced lung function, asthma,
cardiovascular disease,
preterm birth, and premature death.
Children and elderly most vulnerable.
- Ground-level ozone (*from NO_x, methane, volatile organic compounds*) is associated with many adverse health effects including premature death, respiratory hospital admissions, cases of aggravated asthma, lost days of school, and reduced productivity among outdoor workers.*
- Pittsfield has higher than average incidence of cardiovascular disease, including heart attack and childhood asthma**



* "Health Effects of Burning Fossil Fuels", State Energy & Environmental Impacts Center, NYU

** MA Dept. of Public Health EJ Screening Tool



Life Expectancy in Pittsfield

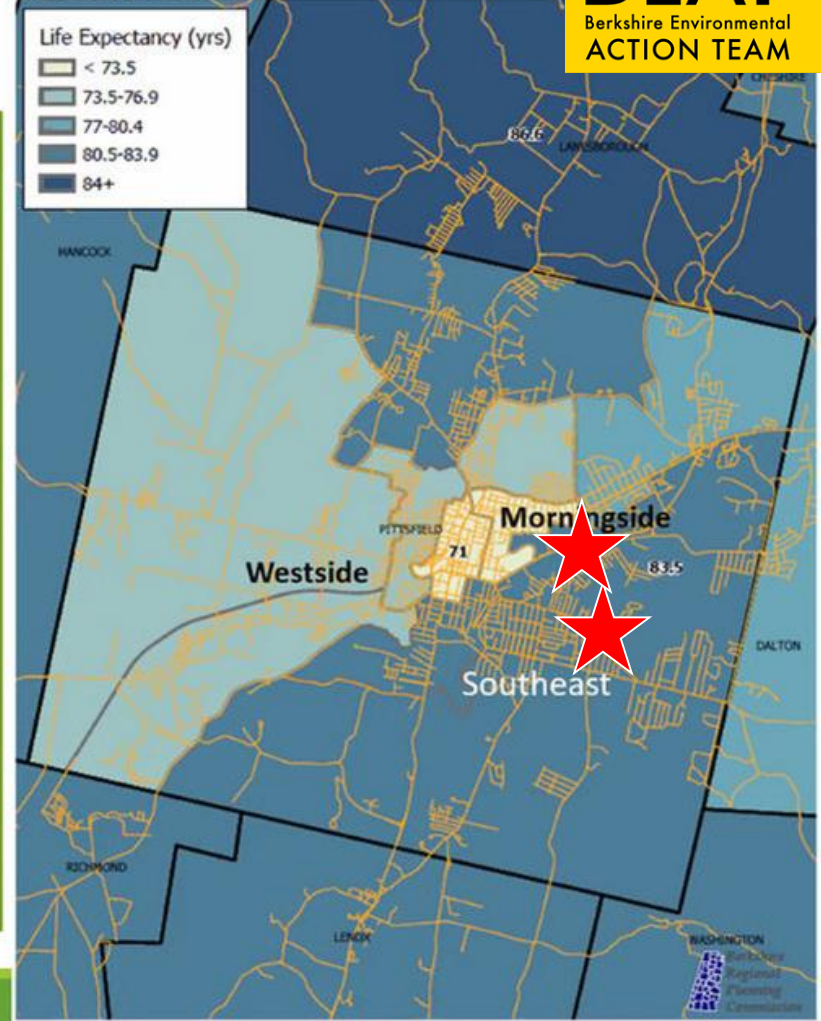
A recent BRPC analysis showed stark differences in life expectancy across Pittsfield based on neighborhood of residence.

Those living in the Morningside/Westside neighborhoods live, on average, 10-12 fewer years than those in the more income-secure Southeast neighborhood:

- Morningside: 71
- Westside: 73.9
- Pittsfield average: 79.5
- Southeast: 83.5 years

Source:
Berkshire
Benchmarks

Life Expectancy

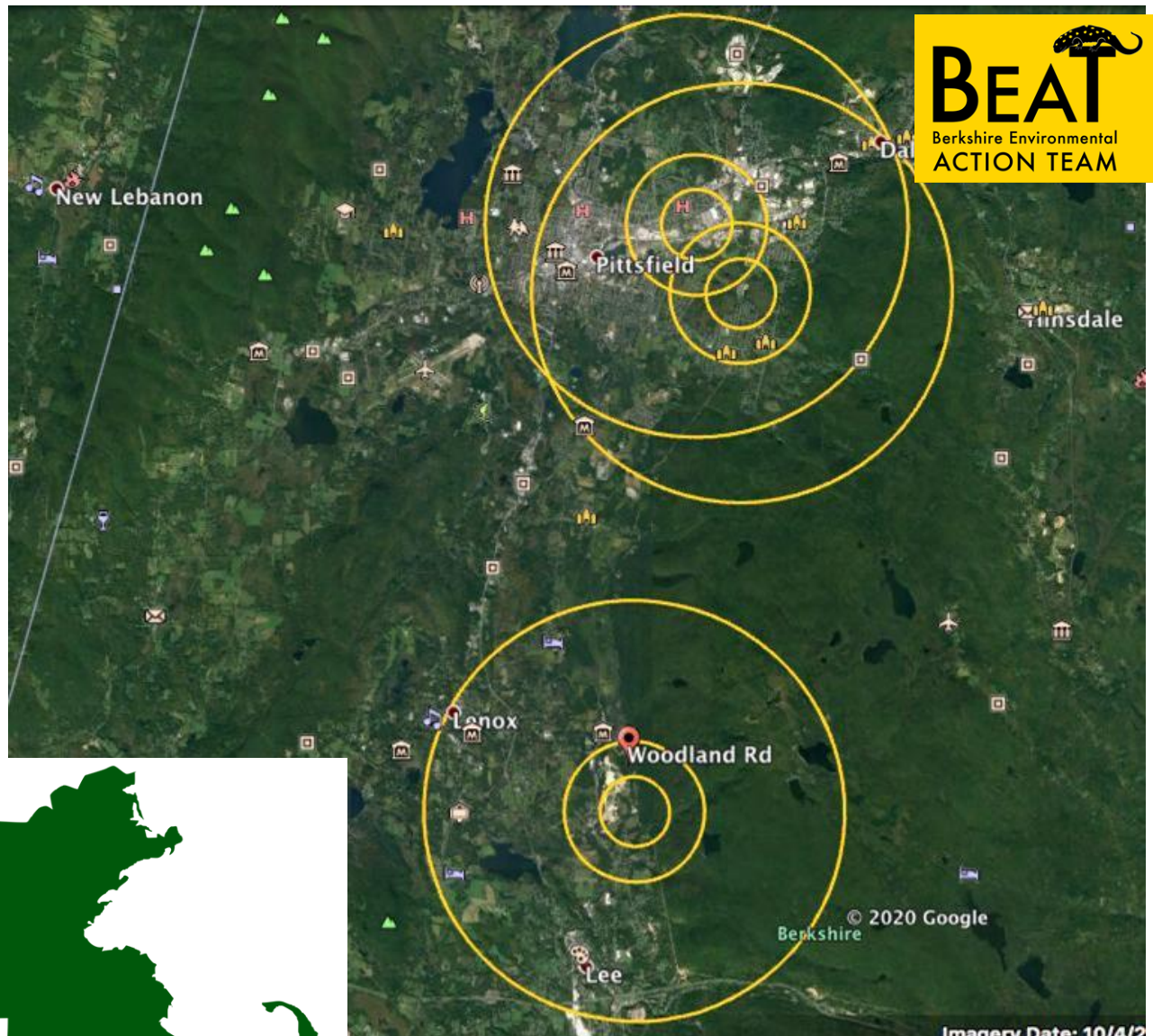


Peaker plants in Berkshire County

- Three fossil fueled peaking power plants in Berkshire County:

Woodland in Lee,
Doreen in Pittsfield
owned by Cogentrix

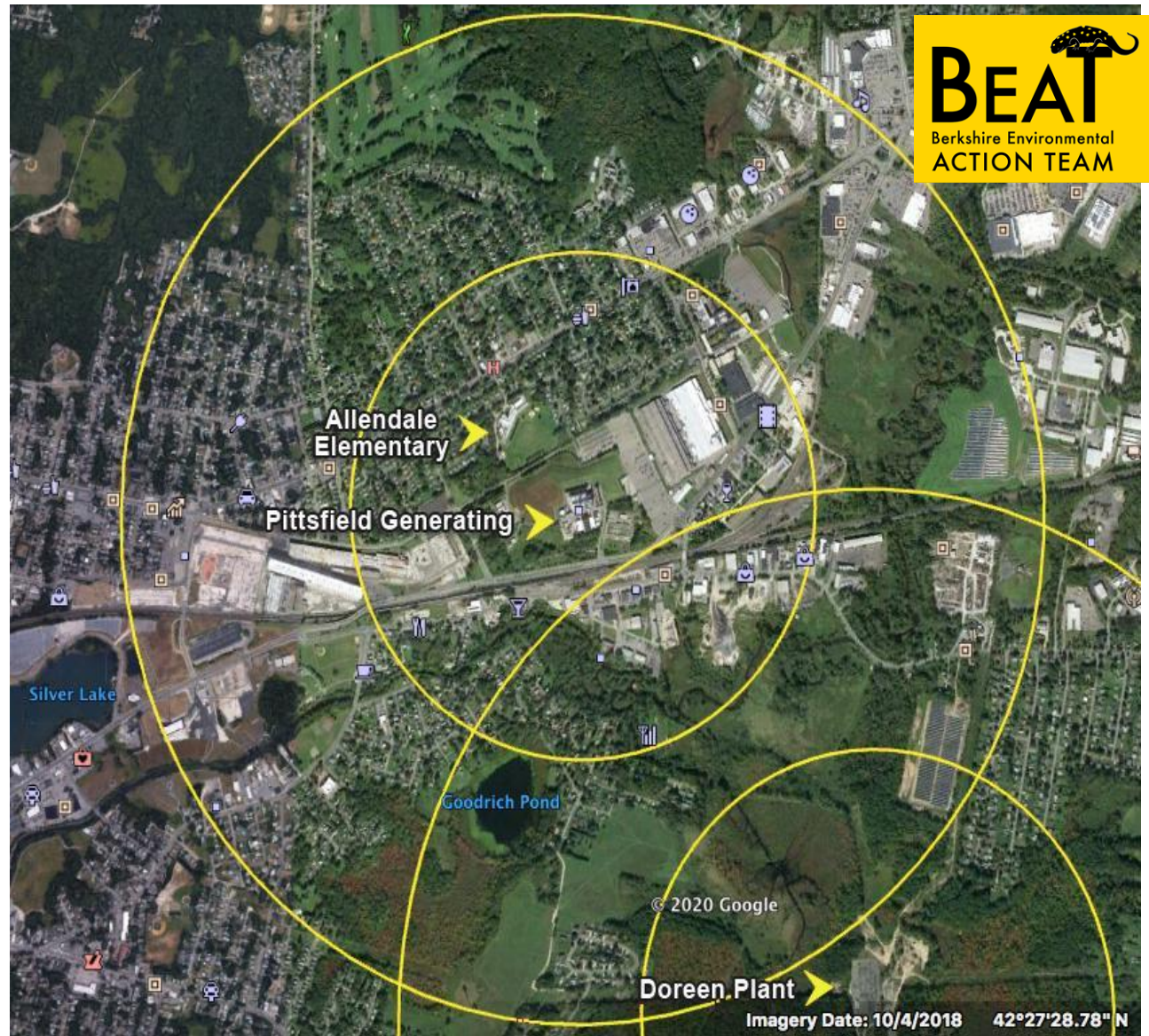
Pittsfield Generating
in Pittsfield
owned by Hull St.



Pittsfield Peakers

- Directly in center of the city
- Directly adjacent to Environmental Justice neighborhoods
- Most elementary and middle schools within 3 miles of plants.

Closest less than 1,000 ft.



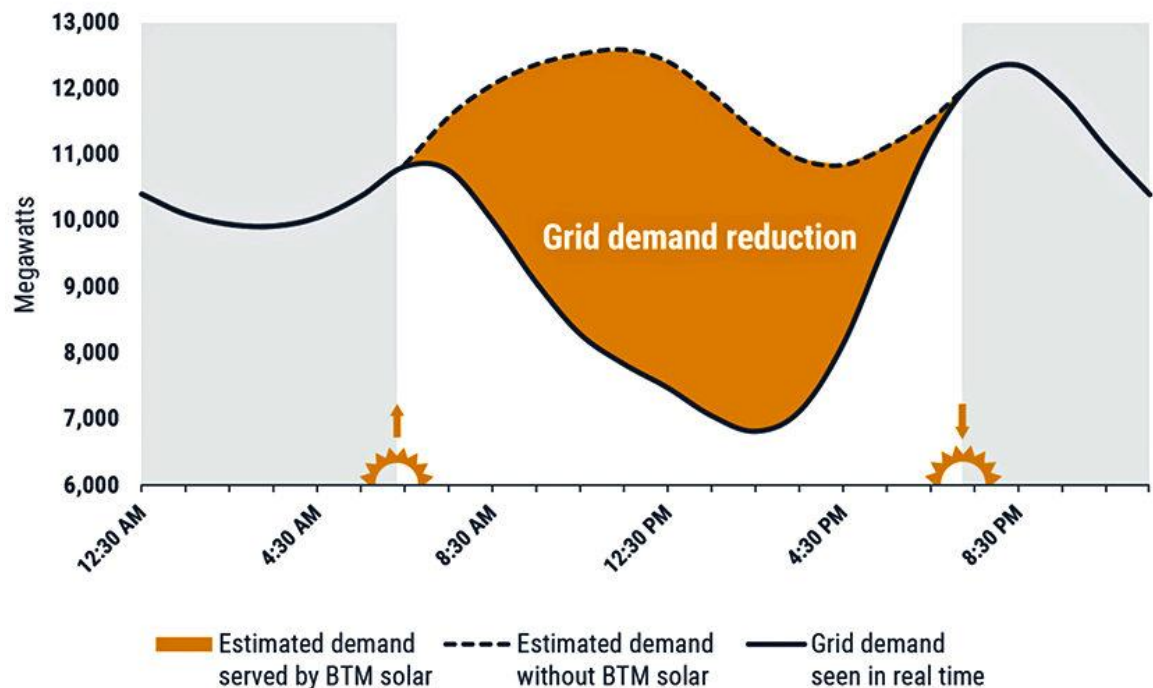
Why grid scale battery storage is better:

— **Most peakers are easy to replace with grid storage.**

Most peak events are short to medium duration, making current tech like lithium ion batteries viable: 4-8 hour events, especially in summer.

Longer term storage
Becoming available,
like Form Energy's
multi-day iron-air
systems, can serve
longer term needs
like winter peak.

Estimated impact of behind-the-meter solar on April 9, 2023



Why grid scale battery storage is better:

- Batteries able to supply power in seconds rather than multiple hours or a day of startup time needed for current fossil fuel peakers. This instantaneous supply is especially helpful in cases of emergency black-outs in catastrophic weather
- Battery storage systems don't just supply power. They can also provide ancillary services like frequency regulation and voltage control

We need to make ISO markets favorable to rapid adoption of both short and long term storage to address all peak demand scenarios.

Peaker plant locations already have interconnection and injection rights. Converting existing locations to storage saves interconnection time and infrastructure resources.



Results of conversations with owners:

— Pittsfield Generating

Mixed results

Original position was that they are “solving intermittency” with fossil fuel operations.

Looked into conversion to storage and renewable
Found that energy market makes status quo still more profitable

Found barriers to transition prohibitive

- Loss of injection rights
- Alternative Compliance Payments are declining
- Inability to collect RECs from stored power generated on site
- MOPR is still disincentivizing renewables

*We're continuing to investigate other alternate paths like adding storage to existing operations, electrified co-generation opportunities, selling of capacity to renewable generation sources, **but ISO market structures more favorable to renewables and storage would help make the transition easier.***

Results of conversations with owners:



— **Cogentrix**

Very successful!

Retired 2 Berkshire Co. peakers

Retired West
Springfield peaker

Converting
W. Springfield
to storage &
renewables



Redevelopment of West Springfield Station

Station can continue to help ensure local grid reliability and reduce peak prices



As the industrial economy evolved away from heavy power use the station increasingly become needed only for peak energy use periods and eventually only for reliability.

Now however, the station's electrical interconnection to the New England grid makes it an advantageous location for the "post-fossil fuel" power supply West Springfield.

Serving the community since 1949:

- 1949 Coal fired Units 1 & 2 48 MW each
- 1957 Coal fired Unit 3 107 MW
- 1960s converted to heavy fuel oil
- 1969 small "jet" added 20 MW
- 1990s natural gas available
- 2002 Units 1 & 2 replaced with "aeroderivative" combustion turbines
- 2021 Unit 3 retired
- 2021 Redevelopment begins
- 2022 Units 1 & 2 and the jet deactivated

Power Station Area Today

Relatively small area available for redevelopment, but sufficient for up to 150 MW

1. Coal Ash Landfill – cap cannot be disturbed
2. Eversource Easements – substation & lines
3. Current Solar Array
4. Future Solar Array
5. Bordered by Agawam Landfill
6. Economically Available for Redevelopment



Redevelopment Potential

Former coal yard, now oil & water tanks, can be repurposed to host BESS



Project Description

45 MW – 180 MWh (4-hour duration) to supply MA *Clean Peak Standard* program



Battery system from by one of the largest suppliers in the nation - FlexGen Power Systems, Inc.

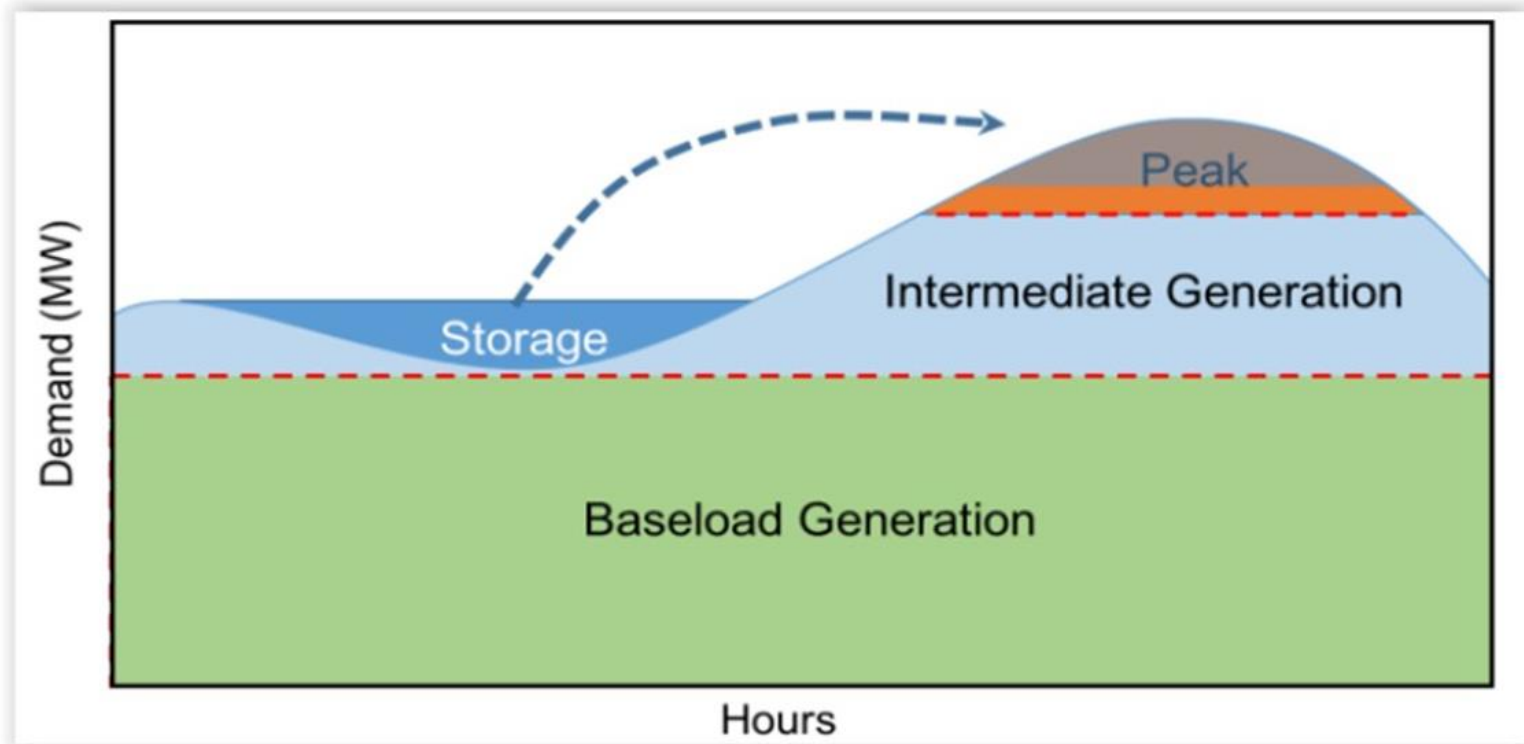
- Battery containers set on concrete pads; containers are fully enclosed, but cannot be entered
- Batteries are lithium iron phosphate (LFP) type preferred for safety reasons
- Interconnection will be via existing transformer (formerly that for Unit 2)
- Minimal site work except for crushed stone and concrete pads
- Site work could start during winter 2023/2024, containers could start arriving mid 2024
- Project timing dependent on final ISO NE interconnection approval

Purpose of the Project

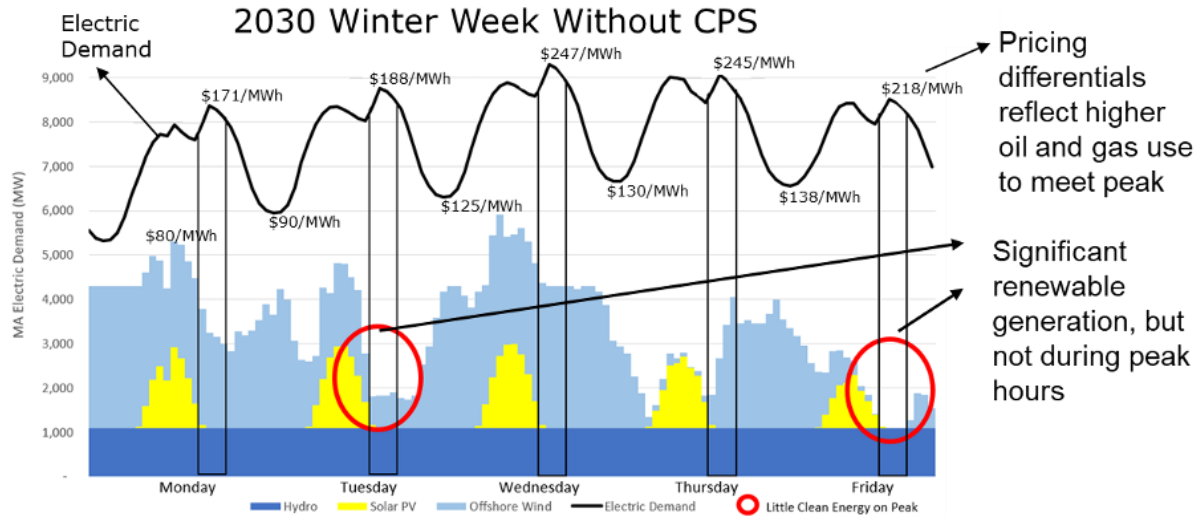
Project will serve the Massachusetts **Clean Peak Standard** program, a first in the nation program to deliver low-cost renewable energy when energy market prices are the highest

Periods of the greatest solar or wind energy are not the periods of the highest energy use or cost

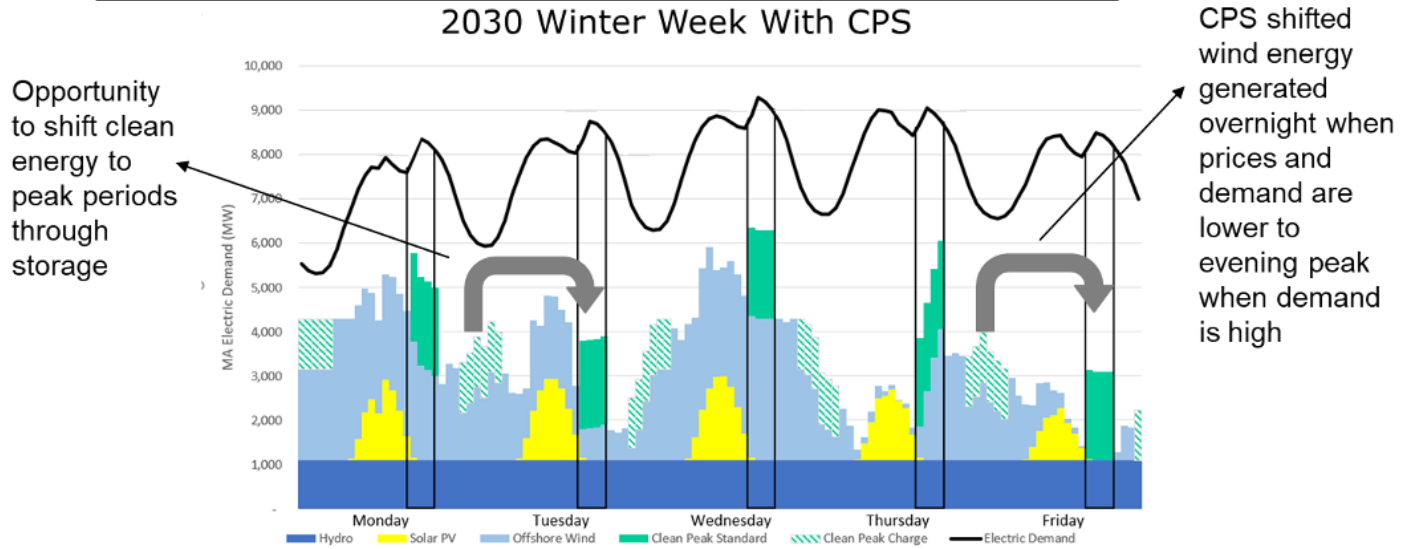
The CPS program incentivizes battery projects to shift solar and wind energy from the non-peak hours when it is generated to the peak hours when it is needed the most



Benefits of the Clean Peak Standard



Production profile for 1,090 MW Hydro, 3,200 MW Offshore Wind, 5,000 MW Solar PV



Production profile for 1,090 MW Hydro, 3,200 MW Offshore Wind, 5,000 MW Solar PV

Schedule

Goal is for BESS to be in commercial service from 2025

- Discussions w/Town of West Springfield
- Initiate detailed engineering design
- Preliminary permitting activities
- Engage with FlexGen & site related contractors
- Containers arrive at station
- BESS installation and connection
- Commissioning & commercial operation



- Finalize interconnection process with ISO NE
- Obtain final funding commitments
- Finalize supply agreement with FlexGen
- Begin on-site work

Beneficial changes to help promote clean energy development

Institutions are obligated to adhere to tariffs and regulations designed for conventional resources

- The existing interconnection rules and injection rights anticipate a static generating resource for 20 to 40 years.
- Peaking resources have a low-capacity factor and underutilized injection rights.
 - Regulators should consider allowing clean energy additions to existing facilities to benefit from existing and underutilized injection rights.
- Existing generating resources have valuable interconnection rights that terminate upon the retirement of the existing resource.
 - Regulators should consider extending the existing injection rights for the development of qualified clean energy resources.
 - Such a change would provide significant cost savings and a meaningful reduction in the development schedule.
- State brownfield provisions should focus on mitigation of site conditions and streamlining permitting for clean energy.