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April 1, 2022

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
EXPANDED ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME	: Comprehensive Wastewater Management Plan
PROJECT MUNICIPALITY	: Sudbury
PROJECT WATERSHED	: Sudbury, Assabet and Concord (SuAsCo)
EEA NUMBER	: 16510
PROJECT PROPONENT	: Town of Sudbury
DATE NOTICED IN MONITOR	: January 7, 2022

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G.L. c. 30, ss. 61-62L) and Section 11.06 of the MEPA Regulations (301 CMR 11.00), I have reviewed the Expanded Environmental Notification Form (EENF) and hereby determine that this project **requires** the submission of an Environmental Impact Report (EIR). In accordance with Section 11.06(8) of the MEPA regulations, the Proponent requested that I allow a Single EIR to be submitted in lieu of the usual two-stage Draft and Final EIR process. I hereby grant the request to file a Single EIR, which the Proponent should submit in accordance with the Scope included in this Certificate.

Project Description

The EENF/Draft Comprehensive Wastewater Management Plan (CWMP) provided an overview of the Town of Sudbury's wastewater assessment and planning efforts, reviewed impacts to the Town's drinking water supply and surface water bodies from potential failure of on-site septic systems, identified wastewater management and treatment priorities for addressing threats to the Town's water supply from septic systems, and described a Draft Recommended Plan that proposes to provide sewer service to areas with the greatest potential to impact water supplies.

Needs Assessment

The Town does not have a sewer system or a public wastewater treatment facility and all but five properties are served by on-site septic systems. In 1995, 2001 and 2010, the Town conducted wastewater management planning studies of the Route 20 commercial district in the southern part of Sudbury. This area was the focus of the studies because most of it is located within the Zone II groundwater protection area associated with the Town's Raymond Road public water supply wells. In addition, economic development in the commercial district has been constrained by the need for on-site septic systems.

The Draft CWMP expanded upon the earlier studies by analyzing soil and groundwater conditions, lot size, condition of on-site septic systems, development potential and environmental constraints such as wetlands and water supply protection zones in 10 delineated study areas covering the whole Town. Wastewater needs and development potential were estimated for a 20-year buildout period. Five Needs Areas were identified in which septic systems would be replaced by sanitary sewers that would convey wastewater to a new wastewater treatment plant (WWTP). The Needs Areas largely coincide with the Route 20 corridor identified in earlier studies in addition to other areas north and south of Route 20 within the Zone II or with commercial uses. The other study areas contain generally larger residential properties with soil and groundwater conditions that are suitable for septic systems; as noted below, these areas will continue to be served by on-site septic systems. The Needs Areas proposed to be sewered are described below; Table 1 provides estimates of wastewater maximum daily flows under existing and future conditions for each Needs Area.

- Route 20 Sub-Area A and Sub-Area B Needs Areas: The Route 20 Needs Area includes 402 parcels located along Route 20 at its intersection with Union Avenue and Raymond Road. The major land use is non-residential and many of the commercial uses are located within business condos, which generally have more significant wastewater discharges through on-site septic systems. This Needs Area has been divided into Sub-Area A and Sub-Area B. Sub-Area A includes 119 parcels generally located where Route 20 intersects Union Avenue, Nobscot Road and Raymond Road. Sub-Area A is the top priority for sewering due its location within the Zone II of the Raymond Road water supply wells and the concentration of commercial uses within it. Sub-Area B includes 114 parcels located along Route 20 northeast of Sub-Area A; sewering this area is a lower priority because it is not within the Zone II.
- Raymond Road South Needs Area: This Needs Area includes 148 parcels and is located is located south of Route 20. Allowance Brook flows through the center of the area. Approximately 90 percent of the area is in residential use. The Raymond Road South Needs Area is a high priority for sewering due to the presence of the Town's five Raymond Road water supply wells and associated Zone 2 protection areas are within the area.
- Raymond Road North Needs Area: This Needs Area is located northwest of the Route 20 Needs Area and it is bordered to the north and west by Dudley Brook. There are 218 parcels, approximately 90 percent of which are in residential use. This area has been recommended for sewering due to its location within the Zone II water supply protection area of the Raymond Road wells.
- Goodman Hill Needs Area: This Needs Area is located north of Route 20 and east of Union Avenue. Its eastern side borders the Town of Wayland and Hopp Brook flows along its western edge. The Needs Area includes 76 parcels, of which 87 percent are in residential use.

Table 1. Maximum Daily Wastewater Flows (gallons per day (gpd)) Under Existing and Future Buildout Conditions

Needs Area	Existing (gpd)	Buildout (gpd)
Route 20 Sub-Area A	82,000	297,000
Raymond Road South	59,000	76,000
Raymond Road North	88,000	107,000
Goodman Hill	38,000	48,000
Route 20 Sub-Area B	24,000	68,000
Total	291,000	596,000

The CWMP also identified a sixth needs area called the Route 20 East Needs Area. This area is located along the eastern end of Route 20 in Sudbury and abuts the Wayland town line. The CWMP has proposed that this area remain connected to on-site septic systems; however, it is located in a commercial district and may need to be serviced by sewers in the future. As described below, wastewater flow from this area may be conveyed to a new sewer main in Route 20 to be constructed by the Town of Wayland and treated at the nearby Wayland wastewater treatment facility. The new sewer main is anticipated to be along an existing roadway (Route 20), and impacts limited to construction period activities. According to the EENF, the Town will submit a Notice of Project Change (NPC) if and when the Route 20 East Needs Area is proposed to be sewered, provided that Agency Actions remain outstanding at that time.

Draft Recommended Plan

The EENF described a Draft Recommended Plan which proposes a phased approach to wastewater management with the following components:

- A new WWTP to be constructed at the Town's Department of Public Works (DPW) site at 275 Old Lancaster Road. The WWTP will be initially constructed with a capacity to treat 300,000 gpd of sewage, which will be increased to 600,000 gpd over the next 20 years;
- Subsurface discharge beds under the playing fields at the Curtis Middle School located at 22 Pratts Mill Road; this facility will require a groundwater discharge permit from MassDEP and will also be constructed with a capacity to accept 300,000 gpd of treated wastewater effluent and expanded to accommodate 600,000 gpd as the WWTP is expanded;
- A wastewater collection system with approximately 17 miles of sewer mains, including 4,400 linear feet (0.8 miles) within Route 20, and five pumping stations that will connect 675 parcels to the wastewater system; and,
- Implementation of a Septage Management Plan (SMP) for properties which will continue to use on-site septic systems.

The WWTP will feature a Membrane Bioreactor (MBR) system, which includes anaerobic and anoxic biological treatment processes and filtration that is capable of removing organic matter, bacteria and viruses. As detailed in the Scope, the Single EIR should provide a more comprehensive description of the proposed WWTP and discharge area, including conceptual plans, and an explanation of how these systems will ensure that treated effluent meets applicable water quality standards.

The Town will implement an SMP for areas where septic systems will remain in use. The purpose of an SMP is to maintain the operation of septic systems to maintain public health, protect groundwater and surface water resources and avoid the need for additional sewering to due failure of septic systems. It will include inspections of septic systems and will identify areas containing septic systems warranting monitoring and maintenance. According to the EENF, the Town may be eligible to receive up to $200,000 through MassDEP's Community Septic Management Program is a source of low interest loans to property owners for the repair and replacement of septic systems.

Project Phasing

The project will be constructed in the following phases:

Phase 1
- Construct WWTP and discharge area with a capacity to treat 300,000 gpd;
- Construct a pump station and 0.9-mile long force main to convey treated wastewater from the WWTP to the discharge area; and,
- Install sewers in the Route 20 Sub-Area A Needs Area, including 1.7 miles of gravity sewer mains, 1.4 miles of forces mains and one pump station.

Phase 1A
- Install sewers in the Raymond Road South Needs Area, including 2.8 miles of gravity sewer mains, 0.8 miles of forces mains and one pump station.

Phase 2
- Expand the capacity of the WWTP and discharge area to 450,000 gpd; and,
- Install sewers in the Raymond Road North Needs Area, including 3.2 miles of gravity sewers, 1.4 miles of force mains, 0.5 miles of low-pressure mains and one pump station.

Phase 3
- Expand the capacity of the WWTP and discharge area from 450,000 gpd to 600,000 gpd; and,
- Install sewers in the Goodman Hill and Route 20 Sub-Area B Needs Areas, including 2.2 miles of gravity mains, 0.1 miles of force mains and one pump station.

Project Site

According to the EENF, the Town has a population of 19,655. Approximately 89 percent of the Town is zoned for residential use, five percent is zoned for tax exempt uses, 1.2 percent for municipal use, 0.6 percent for open space/agricultural use and three percent for commercial and industrial use, most of which is located in the Route 20 corridor. Specific characteristics of each Needs Areas are described above.

The WWTP is proposed to be constructed on a two-acre portion of the Town's 16.1-acre DPW site, which also includes the Town's Highway Department and Health Department. The existing buildings and parking areas are located at the center of the site, with wooded areas and wetlands around

the site's perimeter. The site is bordered by Old Lancaster Road to the northeast, residential neighborhoods to the north and east, and Hopp Brook to the west and south. The effluent discharge area is proposed to be under the playing fields at the Ephraim Curtis Middle School, which is located approximately 0.5 miles northwest of the DPW site. The 26.5-acre school site is bordered by forested land and wetlands associated with Hop Brook to the north, residential areas to the east and west and Pratts Mill Road to the south. The playing fields, which occupy approximately 11 acres of the site, are located south of the school building and north of Pratts Mill Road.

The Raymond Road South Needs Area and small portions of the Route 20 Sub-Area A and Raymond Road North Needs Areas are located within 1 mile of one Environmental Justice (EJ) population designated as Minority located in north Framingham. Project components are located within five miles of EJ populations designated as Minority located in Hudson, Acton, Marlborough and Framingham; English Isolation located in Framingham; Minority and Income and located in Framingham and Marlborough; Minority and English Isolation located in Framingham; and Minority, Income and English Isolation located in Marlborough EENF included a review of potential impacts and benefits to surrounding EJ populations, and described public involvement efforts undertaken to date.

Permitting and Jurisdiction

The project is subject to MEPA review and requires preparation of a mandatory EIR pursuant to 301 CMR 11.03(5)(a)(3) because it requires a State Agency Action and involves the construction of one or more New sewer mains ten or more miles in length. The project also exceeds ENF thresholds at 301 CMR 11.03(5)(b)(1) (construction of a New wastewater treatment and/or disposal facility with a Capacity of 100,000 or more gpd) and 301 CMR 11.03(5)(b)(4)(c)(ii) (New discharge to groundwater of 50,000 or more gpd of sewage). The project requires a Groundwater Discharge Permit and Treatment Works Plan Approval from the Massachusetts Department of Environmental Protection (MassDEP) and a Non-Vehicular Access Permit from the Massachusetts Department of Transportation (MassDOT). It is subject to the MEPA Greenhouse Gas (GHG) Emissions Policy.

The project will require an Order of Conditions (OOC) from the Sudbury Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions (SOC) from MassDEP) and a National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) from the Environmental Protection Agency (EPA).

The Town will seek Financial Assistance from MassDEP through the Clean Water State Revolving Fund (SRF). Therefore, MEPA jurisdiction is broad and extends to all aspects of the project that are likely, directly or indirectly, to cause Damage to the Environment, as defined in the MEPA regulations.

Environmental Impacts and Mitigation

Potential impacts of the project include alteration of approximately 6.46 acres of land, addition of 0.73 acres (approximately 31,800 sf) of impervious area and temporary alteration of 14,411 sf (0.3 acres) of Bordering Land Subject to Flooding (BLSF). The project will also impact Riverfront Area, which was not described in the EENF; this should be provided in the Single EIR. The project will discharge up to 600,000 gpd of treated wastewater to groundwater.

The purpose of the project is to protect the Town's water supply system by replacing on-site treatment of wastewater by septic systems with sewers that will convey sanitary sewage to a new WWTP that will discharge treated wastewater outside of drinking water supply protection zones. The new discharges to groundwater will be regulated through MassDEP permitting, and treatment will be required to be protective of public health. The Single EIR described measures to minimize and mitigate construction impacts and incorporate energy efficient and resilient design features into the WWTP. Additional mitigation commitments for the any projects identified in the final CWMP should be described in the Single EIR.

Request for Single EIR

The MEPA regulations at 301 CMR 11.06(8) indicate that a Single EIR may be allowed provided I find that the EENF:

a. describes and analyzes all aspects of the project and all feasible alternatives, regardless of any jurisdictional or other limitation that may apply to the Scope;
b. provides a detailed baseline in relation to which potential environmental impacts and mitigation measures can be assessed; and,
c. demonstrates that the planning and design of the project use all feasible means to avoid potential environmental impacts.

Consistent with this request, the EENF was subject to an extended comment period under 301 CMR 11.05(8).

Review of the EENF

The EENF included the Draft CWMP, reviewed previous wastewater planning efforts and identified a Recommended Plan. It reviewed the project's potential impacts to cultural resources, wetlands and water quality and describe measures to minimize and mitigate impacts. It included a GHG analysis, described a public participation plan and included data on septic system conditions maintained by the Board of Health.

Consistent with the MEPA Interim Protocol on Climate Change Adaptation and Resiliency, the EENF contained an output report from the MA Climate Resilience Design Standards Tool prepared by the Resilient Massachusetts Action Team (RMAT) (the "MA Resilience Design Tool"),[1] together with information on climate resilience strategies to be undertaken by the project. The Single EIR should provide a more detailed description of the project's impacts and mitigation measures, as set forth in the Scope below.

Alternatives Analysis

The EENF provided an analysis of regional alternatives for wastewater treatment and disposal and alternative locations for the WWTP and effluent discharge area.

[1] https://resilientma.org/rmat_home/designstandards/

Regional Treatment Alternatives

The Town evaluated the potential to connect Needs Areas to collection and treatment systems in adjacent communities. This alternative would minimize impacts associated with construction of a new WWTP and discharge area. The Town of Wayland, which borders Sudbury to the east, operates a small wastewater treatment facility that may have additional capacity to accommodate a portion of the Sudbury's wastewater flows. In addition, the Town of Wayland is planning to construct a sewer main and pump station along Route 20 to serve a development site located in Wayland abutting Sudbury's Route 20 East Needs Area. The Wayland wastewater treatment system will not have sufficient capacity to treat flows from all of the Sudbury Needs Areas; however, if the Route 20 East Needs Area requires sewering in the future, the Town will evaluate a connection from that area to Wayland's system. The Town also had discussions with Marlborough, which borders Sudbury to the west; however, Marlborough's wastewater treatment system does not have extra capacity to accept flows from Sudbury. The southern edge of the Raymond Road South Needs Area abuts the City of Framingham, which is connected to the Massachusetts Water Resources Authority (MWRA) water and sewer systems. According to the EENF, it appears that the nearest sewer main in Framingham has adequate capacity to convey additional flows from Sudbury to the MWRA collection system for transport to the Deer Island Wastewater Treatment Facility. However, a connection to the MWRA system was deemed to be infeasible for the following reasons:

- Legislative approval would be required for Sudbury to join the MWRA system;
- The costs of joining the MWRA system and contributing to infrastructure operation and maintenance are high; and
- Sudbury would have to purchase drinking water from the MWRA in order to avoid an inter-basin transfer of groundwater from the SuAsCo basin used for the public water supply to Boston Harbor, which would deplete the Town's groundwater supply.

Alternative Locations for the WWTP and Discharge Area

According to the EENF, previous studies had identified a Town-owned parcel at 641 Boston Post Road (Route 20) as the proposed site of the WWTP. However, that site was selected when only areas immediately adjacent to Route 20 were to be sewered. Because of the expansion of the Needs Areas, it is no longer centrally located. The preferred location is the DPW site because it is centrally located with respect to the Needs Areas and discharge site, has sufficient space to accommodate the treatment facility without directly impacting wetland resource areas and is already the site of complementary uses. The WWTP will be constructed in a portion of the site closest to Old Lancaster Road, within which sewer mains and the treated wastewater discharge pipe will be constructed.

The EENF reviewed potential groundwater discharge sites that had been identified in previous planning studies. One site found to have suitable soil and groundwater conditions (the "Johnson property") is no longer available because it has recently been developed for residential uses. A second site, Haskell Field, is located over 1.5 miles northwest of the DPW site. This site is owned by the Town and has sufficient space for a discharge area; however, it lacks suitable soils and the site is located within the Zone II protection area of the Town's Hop Brook water supply wells. The preferred location of the discharge area was identified to be the playing fields at the Curtis Middle School. The site is connected to the DPW site by a series of roadways within which the discharge pipe will be installed

without impacting undeveloped areas. The school building in the northern half of the site is located within the Zone II of the Hop Brook water supply wells; however, the southern portion of the site occupied by the playing fields is outside of the Zone II. A hydrogeological evaluation of the site completed in 2012 estimated that the site could accommodate the 350,000 gpd of treated wastewater effluent that was contemplated to be generated by the WWTP under the conceptual design then under consideration. As noted by MassDEP, updated hydrogeological information will be required to confirm that the site can accommodate proposed discharges of up to 600,000 gpd without impacting the Hop Brook wells, and to guide the design of the WWTP and discharge area.

The Preferred Alternative, as described above, has been designed to provide sewer service to priority Needs Areas identified because these areas are located within the Zone II and include soil and groundwater conditions that could lead to failure of septic system, and to support economic development in commercial districts. According to the EENF, the proposed MBR treatment technology will meet pollutant removal requirements to ensure that the discharge will protect public health and environmental resources. As required in the Scope, the Single EIR should provide a comprehensive description and analysis of the treatment and discharge system to support their selection as the Preferred Alternative.

Environmental Justice

As noted above, the project site is located within one mile of an EJ population designated as Minority located in north Framingham. According to the EENF, this EJ population is not likely to be negatively impacted by the project because all construction activities will occur more than 0.5 miles away. According to the EENF, there are no direct routes between the construction areas and the EJ population, and therefore construction vehicles are unlikely to drive through the EJ population. The proposed location of the WWTP and discharge area are more than two miles away from the EJ population. As noted, the Single EIR should provide a comprehensive analysis of the treatment and discharge system, including documentation of groundwater flows, to demonstrate that the system will be protective of public health and will not disproportionately affect the nearby EJ population.

According to the EENF, MassDEP's approval of the Scope for the CWMP required the Town to develop and implement a comprehensive public outreach plan to inform the public and solicit input. The EJ population in Framingham will be included in this outreach effort, which will include notifying residents and posting information on the Town's website, the City of Framingham's website and the Framingham Source online community news web page. The Framingham DPW outreach coordinator will be provided with project information and requested to assist the Town in its outreach efforts.

As required in the Scope, the Single EIR should describe the Town's outreach to local EJ groups and residents, tribes and indigenous organizations during the planning, design and construction phases of the project and provide an analysis to document that the proposed discharge will meet pollutant limits necessary to protect public health.

Growth Management

Executive Order #385 requires that State and local agencies engage in protective and coordinated planning oriented towards resource protection and sustainable economic development. For reasons of both environmental protection and fiscal prudence, investments in public infrastructure should be carefully targeted toward those areas for which clear existing needs have been established and for areas

where denser development is appropriate, thereby relieving development pressures on open space, agricultural lands, and other valuable natural resources.

According to the EENF, the project will accommodate growth primarily within the existing commercial district along Route 20. As shown in Table 1, approximately 85 percent of the increased flow under buildout conditions will be generated in the Route 20 Sub-Area A and Sub-Area B Needs Areas. The project will not provide sewer service to parts of the Town with large tracts of undeveloped land, including agricultural or recreational land. According to the EENF, the wastewater system design is intended to limit potential sprawl and will be consistent with Executive Order #385. Furthermore, sewering the Needs Areas will protect the public water supply by minimizing potential impacts to water quality from septic system failure within the Zone II.

Wetlands and Stormwater

Project activities in an around wetland resource areas will be confined to construction of sewer mains in previously-disturbed right-of-way (ROW) and roadways crossings of Hop Brook, Dudley Brook and Allowance Brook. The EENF asserted that the project will not directly impact wetland resource areas; however, it appears that the EENF did not consider alteration of Riverfront Area associated with stream crossings. The Single EIR should quantify alteration of Riverfront Area and identify mitigation measures. The project will temporarily impact 14,411 sf of BLSF. According to the EENF, BLSF will be restored upon completion of construction and the project will not result in permanent impacts to flood storage. The Single EIR should document any wetland impact that may arise as a result of groundwater flows from the discharge location.

The project will add 0.73 acres of impervious area in connection with the construction of the WWTP and the pump stations. The EENF did not include conceptual plans of these structures or associated stormwater management systems; this information should be provided in the Single EIR. The EENF included a commitment to install sedimentation and erosion controls around work areas during the construction period to minimize impacts to wetlands and water quality.

Cultural Resources

According to the EENF, over 458 structures and four historic districts in Sudbury are included in local, state and/or federal lists of historical resources. The project will not directly impact and historic structures; however, project activities are proposed within two historic districts listed in the Massachusetts Historical Commission's Inventory of Historic and Archaeological Assets of the Commonwealth. Portions of the Route 20 and Goodman Hill Needs Areas are located within the King Phillip Historic District and a section of the Route 20 Needs Area is also located within the George Pitts Tavern Historic District. Because plans for structures and construction activities within the historic district are at a conceptual level, the Town has proposed to conduct reconnaissance surveys approved by MHC after a Preliminary Design has been prepared. Comments provided by MHC indicate that this approach is acceptable. As recommended by MHC in a letter to the Town (dated April 22, 2021) included in the EENF, the Town should consult with the Mashpee Wampanoag Tribe, Wampanoag Tribe of Gay Head (Aquinnah), Nipmuc Tribal Nation, Sudbury Historical Commission, Historic District Commission and MHC during the planning and design stages of the project.

Climate Change

Governor Baker's Executive Order 569: Establishing an Integrated Climate Change Strategy for the Commonwealth (EO 569; the Order) was issued on September 16, 2016. The Order recognizes the serious threat presented by climate change and directs Executive Branch agencies to develop and implement an integrated strategy that leverages state resources to combat climate change and prepare for its impacts. The Order seeks to ensure that Massachusetts will meet GHG emissions reduction limits established under the Global Warming Solution Act of 2008 (GWSA) and will work to prepare state government and cities and towns for the impacts of climate change. I note that the MEPA statute directs all State Agencies to consider reasonably foreseeable climate change impacts, including additional greenhouse gas emissions, and effects, such as predicted sea level rise, when issuing permits, licenses and other administrative approvals and decisions under M.G.L. c. 30, § 61. The GHG Policy and requirements to analyze the effects of climate change through EIR review play an important role in this statewide strategy. These analyses advance proponents' understanding of a project's contribution and vulnerability to climate change.

Additionally, the Town is a participant in the Commonwealth's Municipal Vulnerability Preparedness (MVP) program. The MVP program is a community-driven process to define natural and climate-related hazards, identify existing and future vulnerabilities and strengths of infrastructure, environmental resources and vulnerable populations, and develop, prioritize and implement specific actions the Town can take to reduce risk and build resilience. *The Sudbury Municipal Vulnerability Preparedness Workshop Summary of Findings* report (dated June 29, 2019) identifies severe storms, extreme temperatures, fire and drought as the most significant climate hazards facing the Town.

Adaptation and Resiliency

Effective October 1, 2021, all MEPA projects are required to submit an output report from the MA Resilience Design Tool to assess the climate risks of the project. Based on the output report attached to the EENF, the WWTP and pump stations have high exposure ratings based on their location for: extreme precipitation (riverine flooding) and extreme heat. The EENF did not include an evaluation of the effluent disposal area; this should be provided in the Single EIR. Based on the 30-year useful life identified for the project and the self-assessed criticality of the proposed WWTP and pump stations, the MA Resilience Design Tool recommends a planning horizon of 2050 and a return period associated with a 25-year (4.0 percent chance) storm event when designing the WWTP and a 10-year (10.0 percent chance) storm event when designing the pump stations. The 25-year return period for the WWTP would appear to correspond to infrastructure with a medium criticality rating, whereas the 10-year return period for the pump stations corresponds to a low criticality rating. These assessments of criticality (generated from user inputs) appear low given the critical role that this infrastructure will play in managing wastewater flows and reducing impacts to water quality. According to the EENF, the design of the project is at a conceptual stage and the final design will incorporate measures to increase the project's resilience to future climate conditions based on the New England Interstate Water Pollution Control Commission's Technical Report 16, which includes recommendations for resilient treatment facility design. As detailed in the Scope, the Single EIR should provide an expanded analysis of future climate assumptions and potential resilience design measures. The Single EIR should consider output recommendations from the MA Resilience Design Tool applicable to "high" critical assets, and should consider recommendations for a longer useful life.

Greenhouse Gas (GHG) Emissions

This project is subject to review under the May 5, 2010 MEPA GHG Policy. The Policy requires Proponents to quantify carbon dioxide (CO2) emissions and identify measures to avoid, minimize or mitigate such emissions. According to the EENF, GHG emissions associated with septic systems in the area are greater than the anticipated GHG emissions associated with electricity use by the WWTP and pump stations. The EENF compared estimated rates of GHG emissions associated with septic systems in the Needs Areas to emissions from electricity use of the pump stations and WWTP. Per capita emissions of carbon dioxide equivalents (CO_2e) from septic systems was estimated as 0.11 tons per year (tpy) based on a report prepared in 2010 by the Water Environment Research Foundation (WERF).[2] The existing population within the Needs Areas is 2,090 people, which is projected to increase to 4,680 under full build-out conditions. Therefore, total GHG emissions associated with all septic systems to be eliminated ranges from 230 tpy under existing conditions to 516 tpy under full build-out conditions. According to the EENF, the WWTP will be designed as an energy-efficient building with high R-value roof and wall insulation, efficient lighting and heating systems, use of high-efficiency pumps with variable frequency drives (VFD) and minimal heating in the pump stations. The EENF estimated that combined GHG emissions of the WWTP and pump stations will range from 41 tpy under initial conditions with low wastewater flows to 63 tpy, a reduction of 168 to 475 tpy compared to emissions from septic systems under existing conditions. I note that the EENF used an emissions factor of 488.9 pounds of CO_2 per megawatt-hour (lbs/MWh) of electricity use, which was developed by the Environmental Protection Agency (EPA); the Single EIR should use the most recent grid electricity emissions factor published by the Independent System Operator- New England (ISO-NE), which is currently 633 MWh per year. As detailed in the Scope, the Single EIR should clarify the proposed heating system to be used in the WWTP and provide additional information on the design of the WWTP requested by the Department of Energy Resources (DOER). It should evaluate the feasibility of rooftop photovoltaic (PV) systems on the WWTP and include a commitment to install electric vehicle (EV) charging stations at the WWTP site.

Construction Period

The EENF reviewed construction-period mitigation measures that will be implemented to minimize impacts. All construction activities should be managed in accordance with applicable MassDEP's regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017). The project should include measures to reduce construction period impacts (e.g., noise, dust, odor, solid waste management) and emissions of air pollutants from equipment, including anti-idling measures in accordance with the Air Quality regulations (310 CMR 7.11). I encourage the Town to require that its contractors use construction equipment with engines manufactured to Tier 4 federal emission standards, or select project contractors that have installed retrofit emissions control devices or vehicles that use alternative fuels to reduce emissions of volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment. Off-road vehicles are required to use ultra-low sulfur diesel fuel (ULSD). If oil and/or hazardous materials are found during construction, the Town should notify MassDEP in accordance with the Massachusetts Contingency Plan (310 CMR 40.00).

[2] "Evaluation of Greenhouse Gas Emissions from Septic Systems" available online at https://www.waterrf.org/research/projects/evaluation-greenhouse-gas-emissions-septic-systems

Erosion and sedimentation controls should be implemented and maintained in accordance with the Stormwater Pollution Prevention Plan prepared in accordance with the NPDES Construction General Permit requirements. The Town should prepare a spills contingency plan for addressing releases of fuel or other materials during construction. A comprehensive list of construction-period mitigation measures should be provided in the Single EIR.

Conclusion

The EENF/CWMP described the recommended Plan, potential environmental impacts and proposed mitigation measures in sufficient detail to warrant a Single EIR. The Scope below identifies analysis and information that should be provided in the Single EIR.

SCOPE

General

The Single EIR/CWMP should follow Section 11.07 of the MEPA regulations for outline and Content and the additional information and analyses identified in this Scope. The Single EIR should identify and describe any changes to the project since the filing of the EENF and provide an update on State, local and federal permitting.

Project Description

The Single EIR should include an executive summary, it should identify significant environmental benefits and impacts, and measures that will be taken to avoid, minimize and mitigate adverse impacts. The Single EIR should describe the planning process that has occurred to date, and the proposed schedule for implementing the remaining phases of planning, design, environmental permitting and review, and construction. Detailed information should be provided for each area where construction is proposed, including maps that show where sewer lines, cross-country easements, pumping stations, and other facilities will be located. It should identify environmental impacts of all alternatives and describe mitigation measures for the Preferred Alternative. The Single EIR should discuss the state permitting process for implementation of the Recommended Plan proposed in the CWMP and describe how it will meet all applicable performance standards. I encourage early coordination with MassDEP during preparation of the Single EIR/CWMP.

CWMP

The Single EIR should include a Final CWMP, including, as necessary, updated delineations of Needs Areas and wastewater flow estimates. It should include conceptual plans and more detailed descriptions of the WWTP, discharge area, pump stations and sewer mains. To the extent possible, the Single EIR should provide plans of sufficient detail to support the Town's determination that the Recommended Plan, including the use of MBR treatment technology, will accommodate projected flows and comply with anticipated effluent discharge limits. The Single EIR should review alternative alignments of the sewer main in the Raymond Road South Needs Area that avoid Zone I well protection zones. It should review the Town's land use planning and provide documentation to show that the proposed sewering is not intended to facilitate secondary growth.

The Single EIR should include the results of an updated hydrogeological report or additional data and analysis of groundwater and soil conditions at the proposed discharge area to support the proposed capacity of the facility. As noted by MassDEP, additional analysis of the discharge area is necessary to determine whether the effluent will be discharged into the Zone II of the Hop Brook water supply wells and whether the effluent would as a result be required to meet more rigorous permit requirements; this information could affect the final design of the treatment and disposal systems. The Single EIR should analyze whether use of the school playing fields or any surrounding forest land/open space would be impacted by siting discharge beds in this location.

The CWMP should clarify the septic system failure rate in the Needs Areas and parts of the Town not proposed for sewering and describe how that information will be used in developing the SMP. As requested by MassDEP, the Single EIR should include specific recommendations for measures to be included in the SMP and provide additional financial and organizational details that must be included in the CWMP.

Environmental Justice

The Single EIR should include an update on the Town's public outreach efforts, including any consultation or planned consultation with the Mashpee Wampanoag Tribe, Wampanoag Tribe of Gay Head (Aquinnah) and Nipmuc Tribal Nation.

The Single EIR should provide a baseline assessment of any existing unfair or inequitable Environmental Burden and related public health consequences impacting EJ Populations in accordance with 301 CMR 11.07(6)(n)1. and the MEPA Interim Protocol for Analysis of EJ Impacts. This baseline assessment should include analysis of the Department of Public Health (DPH) EJ Tool and the environmental indicators in EPA EJ Screen. I note that one environmental indicator in EJ Screen relates to proximity of the selected census block (i.e., here, the identified EJ population) to wastewater discharge locations. It should document that the project design will result in effluent discharge limits that will protect public health in Sudbury and surrounding communities. The Single EIR should also document whether the EJ population is downgradient or upgradient of groundwater flows from the discharge location, and whether any public health impacts are anticipated apart from potential impacts to Hop Brook water supply wells (such as recreational uses of any surrounding waterbodies). The Single EIR should discuss whether the project is anticipated to have any other impacts to the EJ population, including during the construction period, and whether any impacts will disproportionately affect the EJ population as compared to non-EJ populations.

Wetlands and Stormwater

The Single EIR should provide an updated analysis of potential permanent and temporary impacts to wetland resource areas and floodplains, and identify mitigation measures to minimize impacts to wetlands and water quality. It should describe the proposed stormwater management system at the WWTP and review how it will be designed to comply with the Massachusetts Stormwater Management Standards.

Climate Change

The Single EIR should review potential resiliency design measures that may be incorporated into the project design. Given the 20-year buildout of the Recommended Plan, I encourage the Town to design the project based on projected climate conditions beyond the 2050 planning horizon used in the EENF. The Town should demonstrate use of best available climate projections and data in designing project elements, including stormwater management systems and other applicable features, and, if the project (including supporting infrastructure) will not be designed to meet specifications based on climate projections, provide an explanation of the reasons and a description of whether and how the project will be able to take further steps to adapt to climate conditions at a later stage. The Single EIR should consider the recommendations provided in the MA Resilience Design Tool for medium or high critical assets, including the WWTP, discharge area, pump stations and sewer mains, for the 2050 and 2070 planning horizon. Specifically, it should analyze whether the elevation of the WWTF and pumping stations, and the sizing of the stormwater management system, are consistent with these recommendations. The Single EIR should provide clear justification for using the design parameters (useful life, return period/storm scenario) chosen for the project. If the project cannot be built to be fully resilient to future climate conditions, the Single EIR should discuss whether the project has engaged in adaptative management planning, and how future upgrades or retrofits could be made to adapt to worsening climate conditions. General guidance on adaptative management planning is available on the RMAT website.[3] The Single EIR should address the considerations identified in this guidance document.

The Single EIR should identify conditioned space in the proposed WWTP and provide the analysis requested by DOER. It should provide a revised estimate of the project's GHG emissions using the grid emissions rate established by ISO-NE and, if necessary, emissions factors for fossil fuels from the Energy Information Administration (EIA). [4] The Single EIR should clarify whether natural gas or oil will be used for space heating; if a gas- or oil-fired heating system is proposed, the Single EIR should evaluate the feasibility of air source heat pumps (ASHP). It should review the feasibility of rooftop PV systems on the WWTP and include a commitment to construct an EV charging station at the DPW site.

Mitigation and Draft Section 61 Findings

The Single EIR should include a separate chapter summarizing all proposed mitigation measures including construction-period measures. This chapter should also include a comprehensive list of all commitments made by the Town to avoid, minimize, and mitigate the environmental and related public health impacts of the project, including air/GHG, water quality and noise impacts during the construction period. The filing should contain clear commitments to implement these mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation. The list of commitments should be provided in a tabular format organized by subject matter (land, water/wastewater, GHG, environmental justice, etc.) and identify the Agency Action or Permit associated with each category of impact. Draft Section 61 Findings should be separately included for each Agency Action to be taken on the project.

[3] https://eea-nescaum-dataservices-assets-prd.s3.amazonaws.com/cms/GUIDELINES/20210330FlexibleAdaptationPathwaysFormFinal.pdf.

[4] https://www.eia.gov/tools/faqs/faq.php?id=76&t=11#:~:text=The%20U.S.%20Energy%20Information%20Administration,for%20when%20electricity%20is%20generated.

The filing should clearly indicate which mitigation measures will be constructed or implemented based upon project phasing to ensure that adequate measures are in place to mitigate impacts associated with each development phase

Responses to Comments

The Single EIR should contain a copy of this Certificate and a copy of each comment letter received. In order to ensure that the issues raised by commenters are addressed, the Single EIR should include direct responses to comments to the extent that they are within MEPA jurisdiction. This directive is not intended, and shall not be construed, to enlarge the scope of the Single EIR beyond what has been expressly identified in this certificate.

Circulation

In accordance with 301 CMR 11.16, the Town should circulate the Single EIR to those parties who commented on the EENF and to any State Agencies from which the Town will seek permits or approvals, including MassDOT. A copy of the Single EIR should be made available for review in the Sudbury Public Library.

K. Theoharides

April 1, 2022
Date

Kathleen A. Theoharides

Comments received:

01/20/2022 Massachusetts Historical Commission (MHC)
03/03/2022 Town of Sudbury
03/25/2022 Massachusetts Department of Environmental Protection (MassDEP) – Northeast Regional Office (NERO)
03/29/2022 Department of Energy Resources (DOER)

KAT/AJS/ajs

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

January 20, 2022

Secretary Kathleen Theoharides
Executive Office of Energy & Environmental Affairs
100 Cambridge St., Ste. 900
Boston, MA 02114

Attn.: Alexander Strysky, MEPA Office

RE: RE: Sudbury Comprehensive Wastewater Management Plan, Sudbury, MA.
W&C PN 0231802.00. MHC #RC.69626. **EEA #16510.**

Dear Secretary Theoharides:

Staff of the Massachusetts Historical Commission (MHC), office of the State Historic Preservation Officer, have reviewed the Environmental Notification Form (ENF) submitted for the project referenced above, and the MHC's files.

The ENF (Attachment 9) includes a copy of the MHC's letter of April 22, 2021, requesting additional information.

The MHC agrees with the planning approach outlined in the ENF (Project Description, page 32) to provide the specific information with the contents and in the format requested in the MHC's letter when the project plans are developed during the preliminary design phase of the project; to have a reconnaissance-level archaeological survey conducted for the project impact areas; and to consult further with the MHC and other consulting or interested parties to assist in the identification, evaluation, and resolution of any adverse effects to significant historic and archaeological resources.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800), Massachusetts General Laws, Chapter 9, Sections 26-27C (950 CMR 71), and MEPA (301 CMR 11). Please contact me if you have questions or require additional information.

Sincerely,

Edward L. Bell
Deputy State Historic Preservation Officer
Senior Archaeologist
Massachusetts Historical Commission

xc:
Daniel Nason, Sudbury Department of Public Works
Rosemary T. Blacquier, Woodard & Curran
Maria Pinaud, DEP-SRF
Sudbury Historical Commission
Sudbury Historic Districts Commission

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.sec.state.ma.us/mhc

Town of Sudbury

Office of Select Board

Flynn Building
278 Old Sudbury Rd
Sudbury, MA 01776-1843
978-639-3381
Fax: 978-443-0756
selectboard@sudbury.ma.us

March 3, 2022

Secretary Kathleen A. Theoharides
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
Alex Strysky, EEA No.16510, Sudbury, MA CWMP
100 Cambridge Street, Suite 900
Boston MA 02114

Dear Secretary Theoharides:

On behalf of the Town of Sudbury, the Select Board is pleased to submit these comments relative to the above-referenced Comprehensive Wastewater Management Plan (CWMP) Project advertised in the January 7, 2022, Environmental Monitor and currently accepting public comment until March 11, 2022.

In May 2019 at its Annual Town Meeting, the residents of Sudbury voted to approve the borrowing to complete its town-wide CWMP. The State Revolving Loan Fund (SRF) Program, in conjunction with the Massachusetts Clean Water Trust, approved the CWMP on its CY19 Intended Use Plan. The Town engaged the services of Woodard & Curran, as its consultant to complete the CWMP and the EEA No. 16510 filed with MEPA on December 30, 2021, as the Expanded Environmental Notification Form (EENF), with the supplemental filing on February 3, 2022, of the Draft CWMP and Draft SEIR, are the culmination of the efforts expended under the CWMP.

The CWMP is being undertaken by the Town of Sudbury under the jurisdiction of the Select Board, together with the Department of Public Works assigned as the Town's Local Government Unit. The ultimate goal of the CWMP is to update the Town's wastewater planning as a town-wide effort in order to provide the Town with a 20-year wastewater planning document. With the development of the Draft CWMP, this effort is being realized. The CWMP serves to provide data to support the long-term preservation and protection of the Town's major drinking water supplies.

The CWMP completion is a goal of the Select Board, as well as a major goal of the 2021 Master Plan. Regular coordination on the CWMP activities are included at milestone intervals, along with a comprehensive public outreach plan, are in place.

The Board looks forward to MEPA's favorable review of the EENF and Draft CWMP/Draft SEIR so that the goal of completing the CWMP can be brought to fruition in this calendar year. The Board appreciates this opportunity to comment on this most important environmental Project.

Sincerely,
Sudbury Select Board

Jennifer S. Roberts. Chair

Charles G. Russo, Vice-Chair

Daniel E. Carty, Member

Janie W. Dretler, Member

William J. Schineller, Member

cc: Dan Nason, Director DPW
Woodard & Curran

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

March 25, 2022

Kathleen A. Theoharides, Secretary
Executive Office of
Energy & Environmental Affairs
100 Cambridge Street
Boston MA, 02114

Attn: MEPA Unit

RE: Sudbury
Sudbury Comprehensive Wastewater
Management Plan
EEA # 16510

Dear Secretary Theoharides:

The Massachusetts Department of Environmental Protection Northeast Regional Office (MassDEP-NERO) has reviewed the Expanded Environmental Notification Form for the proposed Sudbury Comprehensive Wastewater Management Plan in Sudbury. MassDEP provides the following comments.

Wastewater

MassDEP has discussed wastewater management planning with officials from the Town of Sudbury and their consultants on many occasions in the past and supports the Town's effort to complete the planning process so that existing and future water resource needs can be met. MassDEP has reviewed the CWMP and generally concurs with its findings and recommendations, subject to the following comments. Specifically, MassDEP agrees with the recommendation to provide sewer service for areas where on-site systems have been documented to be in failure; where siting of such systems has serious environmental constraints; and where systems, failing or otherwise, have potential to impair the town's drinking water resources. The CWMP has identified these "needs" areas. Areas for which on-site systems, regulated under Title 5 (310 CMR 15.000),

will provide for proper wastewater management in the future are also identified. Providing centralized wastewater treatment and disposal for identified needs areas will result in a much higher level of wastewater treatment and will also serve to mitigate or eliminate impacts to the towns drinking water resources for those systems located in Zone II areas.

Needs Areas

While the Board of Health records do not show a high Title 5 failure rate throughout the town, there are areas identified where soil conditions, groundwater conditions, or a combination of these factors make design, construction, and operation of on-site systems challenging, and where their proximity to the town wells create the potential for adverse impacts. These areas have been targeted for sewering.

The CWMP includes several tables which provide information on planning level flow estimates, both for existing flows and buildout flows, in the identified needs areas. However, this information needs to be clarified. The information in Tables 4-11 and 4-13 appears to conflict with the information in the recommended plan contained in Table 6-3. These disparities should be explained, and the best estimate of design flows clarified. It will be critical to link the required hydrogeological investigation and subsequent MassDEP groundwater discharge permit application with the proper design flows. It is especially important that that the town understands that MassDEP groundwater discharge permits include a flow limit which is not a running annual average flow, such as is done in many cases in surface water discharge permits. Accordingly, the flow limit of the groundwater permit will be a maximum day flow limit. From the information in Tables 4-11 and 4-13, and more importantly in Figure 6-1, it is clear that max day flows, when including peaking factors and I/I, are considerably higher than average day flows. These max day flows will need to be the basis for sizing key elements of the wastewater collection and treatment works, and also must be the basis for the hydrogeological studies, which are essential to support a groundwater discharge permit application. The procedures for obtaining a MassDEP Groundwater Discharge Permit, and extensive technical guidance on developing required information, are included in MassDEP's *Guidelines for the Design, Construction, Operation, and Maintenance of Small Wastewater Treatment Facilities with Land Disposal.*

Hydrogeological Report (Appendix J)

MassDEP approved a scope of work for a hydrogeological investigation at the Curtis Middle School in 2010; however, no completed hydrogeological report was submitted to MassDEP for review and approval. In the CWMP, the Curtis Middle School remains the recommended location for soil absorption systems (SAS) for final disposal of treated effluent. In order to accommodate the design flows from the collective needs areas recommended for sewering, which are considerably higher than the design flows assessed back in 2010, an updated hydrogeological investigation must be undertaken. Pursuant to 314 CMR 5.09, this is a required submittal which must precede an application for a MassDEP Groundwater Discharge Permit. The CWMP includes a recommendation that the Town and their consultants meet with MassDEP to formally advance that work and reach agreement on a scope of work. MassDEP agrees that this is a necessary step in moving forward. The proximity of the proposed locations of the primary and reserve SAS to the Zone II area for the Hop Brook wells also will need to be assessed and confirmed. Given the time

since the 2010 work was undertaken, and the development of CWMP recommendations for higher flows at the site, the town should meet in advance with MassDEP staff to establish the scope for updating the information that was previously developed. In the event all or a portion of wastewater effluent will be discharged into a Zone II area, a MassDEP Groundwater Discharge Permit will have much more rigorous requirements.

Specific Technical Comments:

Page 2-3 The CWMP identifies four facilities in the Town with MassDEP Groundwater Discharge Permits. There is one additional facility with a Permit: Sudbury Pines Extended Care located at 642 Boston Post Road. The current permit for this facility authorizes up to 21,000 gallons per day of flow from this facility, though the required wastewater treatment plant is not yet constructed (and the facility remains subject to an enforcement action). Further, MassDEP notes that on Figure 6-6, the conceptual sewer layout is accessible from the rear of this facility on Robbins Road.

Appendix C There are some failure rates noted in the Current Conditions Assessment in Section 2 of the CWMP. The information in the Table in Appendix C should delineate the failure rates, along with the other factors used in the table to define sewering needs for each area assessed, including the subareas within each needs areas, to distinguish areas targeted for sewering, with those targeted for on-site systems. The "notes" for some of the entries are also truncated and should be fully provided in the final CWMP.

Table 4-14 The text or figures should clearly indicate the Phase 1A and Phase 2 Raymond Road areas.

Page 2-15 The CWMP indicates there are areas of the town which are served by private wells. If there is any data on water quality impairments, this information should also be provided.

Page 5-1 The CWMP includes a review of the range of options for establishing and maintaining a Septic Management Plan. While Title 5 inspections do not indicate widespread septic system failures, there are extensive water resources throughout the town, and MassDEP recommends that the Town consider putting a Septic Management Plan in place, so that the design, construction, and operation of on-site systems in the town can be more effectively managed. The final CWMP should include a recommendation in this regard, and for any recommended Septic Management Plan, should identify resources needs.

Figure 6-4 The conceptual sewering plan for the South Raymond Road Area includes a segment of proposed force main that passes through a Zone I area of one of the town's active drinking water sources. The town should indicate if there are any alternatives to this alignment, and if not, the CWMP should note that this segment will be subject to more rigorous design and construction standards

included in MassDEP's water line sewer line policy.

MassDEP notes that the Town and Woodard & Curran are continuing to proceed with the public participation program, to further engage the businesses and residents in the Town. This work will not only be essential in addressing outstanding issues and eliciting public support, it is also a requirement for completing a CWMP which will be eligible for SRF assistance pursuant to the regulations at 310 CMR 44.09.

Lastly, MassDEP notes that the Draft CWMP includes an assessment of alternatives for some aspects of the plan, such as the Septic Management Plan noted above and the Future Financial and Organizational requirements outlined in Section 9 of the document. The final CWMP must include formal recommendations for these elements. MassDEP looks forward to working with the Town of Sudbury to resolve the remaining CWMP issues so the plan can be finalized.

The MassDEP appreciates the opportunity to comment on this proposed project. Please contact Rachel.Freed@mass.gov at (978) 694-3258 or Kevin.Brander@mass.gov at (978) 694-3236 for further information on wastewater issues. If you have any general questions regarding these comments, please contact me at John.D.Viola@mass.gov or at (978) 694-3304.

Sincerely,

This final document copy is being provided to you electronically by the Department of Environmental Protection. A signed copy of this document is on file at the DEP office listed on the letterhead.

John D. Viola
Deputy Regional Director

cc: Brona Simon, Massachusetts Historical Commission
Eric Worrall, Rachel Freed, Jill Provencal, Kevin Brander, MassDEP-NERO

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF
ENERGY AND ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENERGY RESOURCES
100 CAMBRIDGE ST., SUITE 1020
BOSTON, MA 02114
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Charles D. Baker
Governor

Karyn E. Polito
Lt. Governor

Kathleen A. Theoharides
Secretary

Patrick C. Woodcock
Commissioner

10 February 2022

Kathleen Theoharides, Secretary
Executive Office of Energy & Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02114
Attn: MEPA Unit

RE: Sudbury CWMP, Sudbury, MA, EEA # 16510

Cc: Maggie McCarey, Director of Energy Efficiency, Department of Energy Resources
Patrick Woodcock, Commissioner, Department of Energy Resources

Dear Secretary Theoharides:

We've reviewed the Expanded Environmental Notification Form (EENF) for the above project. The proposed plan consists of a new wastewater treatment facility including built space that requires space conditioning. Unfortunately, the submission does not contain enough information to fully understand proposed built space and the extent to which such space will be heated and cooled. The following letter will provide strategies which can help mitigate emissions associated with heating and cooling of any built space.

Key Strategies

Deployed together, the following have been found to be effective strategies in advancing emissions reduction, resilience, and affordability for space conditioned built space:

- Building design and construction practices that result in low heating and cooling thermal energy demand intensity (heating and cooling "TEDI") by:
    - Maintaining envelope integrity with framed, insulated walls with continuous insulation;

  - Thermally-broken windows and other components to eliminate thermal bridges;
  - Minimizing glass curtain wall assemblies and excessive windows;
  - Low air-infiltration, confirmed with in-building air-infiltration testing;
  - Energy recovery;
  - Management of solar heat gains;

- Efficient electrification of space heating consisting of hydronic space heating with 100% air to water heat pump input, or air source VRF, or air to air heat pumps.
- Efficient electrification of water heating with air source heat pumps;
- Rooftop PV;
- Electric vehicle ready parking spaces.

Experience has shown that the above deliver 50 to 80% less emissions than projects built to Code while improving affordability and resilience. In addition, significant incentives may be available, including MassSave® incentives, Alternative Energy Credits (AECs), and Solar Massachusetts Renewable Target (SMART) credits.

Key Mitigation Strategies Explained

Building Envelope Performance

High-performing envelope is essential to successful GHG mitigation. Key strategies for maintaining integrity of envelope are:

- Continuous insulation;
- Reducing air infiltration;
- Reducing thermal bridges;
- Limiting or eliminating use of glass "curtain wall" and spandrel assemblies;
- Maximizing framed, insulated walls sections;
- Maintaining windows at or above code levels.

The project should review opportunities to incorporate above code building envelope into the design.

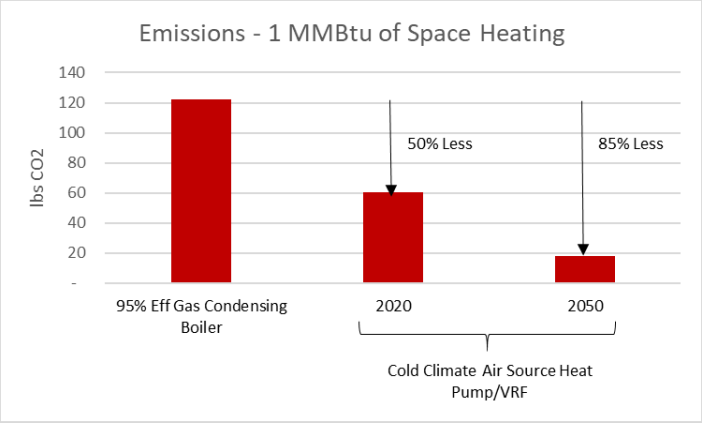
Fossil Fuel Elimination

Efficient electrification and renewable thermal space and water heating entails the swapping of fossil fuels (natural gas, oil, and propane) or electric resistance systems with one or more of the following:

- Cold-climate air source heat pumps and variable refrigerant flow (VRF) for space heating;
- Air source heat pumps for water heating;
- Ground source heat pumps;
- Solar thermal.

Electrification of space and water heating is a key mitigation strategy with significant short- and long-term implications on GHG emissions. Massachusetts grid emissions rates continue to decline with the implementation of clean energy policies that increase renewable electricity sources. The implication is that efficient electric space and water heating with cold climate air source heat pump and VRF equipment have lower emissions than other fossil-fuel based heating options, including best-in-class (95% efficient) condensing natural gas equipment.

Currently, efficient electric heating has approximately **50% lower emissions** in Massachusetts than condensing natural gas heating. By 2050, efficient electric heating is expected to have approximately **85% lower emissions** in Massachusetts than condensing natural gas heating. See illustration below.



We recommend the project review opportunities for air source heat pumps for all space heating.

Heat Pump Water Heating

Similarly to the above, air source heat pump water heating can significantly reduce GHG emissions in both the short and long term when compared to fossil fuel based systems.

Due to the limited occupancy and hot water usage of the proposed building and limited hot water usage. The project should review both air source heat pump water heating and on demand electric service water heating for any onsite hot water usage.

Solar PV

Rooftop PV can provide significant GHG benefits as well as significant financial benefits. The project should review opportunities to maximize on-site PV by set-aside as much roof space as possible for future rooftop PV.

Even if PV is not installed during building construction, it's important to plan the project to ensure that roof space is set aside for PV and that roof space doesn't become unnecessarily encroached with HVAC appurtenances, diminishing the opportunities for future PV. Electrification of heating and Passivehouse can both contribute to enabling more PV as these approaches can reduce rooftop equipment associated with conventional code HVAC.

Electric Vehicle (EV) Ready Parking Spaces

EV charging stations are critical for the continual transition towards electric mobility. Even if EV charging stations are not installed during construction, it is critical to maximize EV ready spaces as it is significantly cheaper and easier to size electrical service and install wiring or wiring conduit during construction rather than retrofitting a project later.

We encourage the project to incorporate EV ready parking spaces for the project.

Incentives

Buildings which incorporate the above strategies can qualify for significant incentives:

- MassSave performance-based incentives[1] offer incentives for every kWh or therm saved compared to a program-provided energy model. The above energy efficiency strategies offer opportunities for large kWh and therm savings.

- Alternative Energy Credits (AECs)[2] offer incentives to electrify building space heating using heat pumps and/or VRF. This program also includes multipliers which increase value if the building meets Passivehouse standards or buildings built to HERs 50 or less. These credits may be distributed on a quarterly basis over time; or, may be distributed in a lump sum to the developer if certain conditions are met.

- Massachusetts SMART program[3] provides significant incentives for solar development on top of federal and state tax incentives. SMART includes pathways which allow solar production to be sold without off-takers. This may be of potential interest to building developers as this allows them to develop rooftop solar without necessarily engaging with building tenants. For this reason, setting aside rooftop solar PV areas helps ensure that building owners' ability to monetize the roof is not impacted.

[1] https://www.masssave.com/en/saving/business-rebates/new-buildings-and-major-renovations/
[2] https://www.mass.gov/guides/aps-renewable-thermal-statement-of-qualification-application
[3] https://www.mass.gov/solar-massachusetts-renewable-target-smart

Codes and Baseline

Massachusetts building energy Code applies to this project with Massachusetts amendments including C402.1.5 (envelope), C405.3 and C405.4 (lighting), C405.10 (EV charging), and C406 (three additional efficiency measures).

Recommendations for the Next Submission

Recommendations are as follows:

1. Ensure base code building scenario meets all requirements including relevant MA amendments. Clearly indicate which three C406 measures are being used in the baseline.

2. Develop two UA analysis tables:

    a. One table that shows how the baseline complies with Table 5.5-5 of ASHRAE 90.1 2013 Appendix G plus Massachusetts Amendment C401.2.4.

    b. A second table that shows how the proposed complies with 2018 IECC Tables C-402.1.3, C402.1.4, and C-402.4. Fenestration limit shall be 30%.

3. Review opportunities for above-code envelope throughout the project. In summary:

    a. Above Code-threshold envelope is recommended (vertical walls, windows, roofs and exposed lower-level floors). Priority should be given to increasing **continuous insulation**. Distinguish between R value of batt and R value of continuous insulation. Indicate planned wall assembly U value and wall construction type (mass, wood, metal stud, etc). Confirm that the relationship between R-value and assembly U-factor conform to Appendix A of the Code.

4. Review opportunities for efficient electrification of both space and water heating. Emissions and utility costs should be estimated for heat pumps/VRF scenarios. Fossil-fuel heating should be avoided.

5. For any buildings proposed to have heating and/or cooling, evaluate the following scenario:

    a. Envelope which exceeds code and having air infiltration of less than 0.25 cfm/sf at 75 Pa. Electric air source heat pump for space heating, electric air source heat pump for water heating.

6. Evaluate incentives, including

    a. Estimate of Alternative Energy Credits

    b. Estimates of MassSave® incentives, based on meeting with utility.

7. Evaluate solar PV.

    a. Investigate models of ownership and operation under SMART, including Qualified Facility pathway.

    b. Meet utility to discuss interconnection.

    c. Include building roof plans showing location of planned solar and location of roof HVAC equipment and other appurtenances.

    d. Indicate on the plans the code-required extent of solar readiness, if applicable.

    e. Map out maximum area available for solar.

    f. Estimate GHG reduction as a result of solar PV.

8. Evaluate opportunities for EV ready and installed EV spaces.

9. Submit project modeling files to the DOER on a flash drive.

10. Compare model results total and individual end uses with representative, prototype buildings developed by Pacific Northwest National Labs/Department of Energy found at the link below. Provide a summary explaining potential differences.

    - https://www.energycodes.gov/sites/default/files/documents/BECP_901_2013_Progress_Indicator_0_0.pdf

    - http://www.energycodes.gov/sites/default/files/documents/2013EndUseTables.zip

    - https://www.energycodes.gov/commercial-energy-cost-savings-analysis

11. Include a table similar to the example below. For "code value" ensure that the value incorporates any improved efficiency per requirements of Section C406.1 of the Massachusetts' amendments.

Measure/Area	**Base Code**	**Proposed**	**% Change**	**Comment**
AC Efficiency (EER)				
Bldg 1	*code value*	*design value*	%	
Bldg 2	*code value*	*design value*	%	
ERV Effectiveness (%)				
Bldg 1	*code value*	*design value*	%	
Bldg 2	*code value*	*design value*	%	
Boiler (% efficiency)				
Bldg 1	*code value*	*design value*	%	
Bldg 2	*code value*	*design value*	%	
LPD (Watts/sq ft)				

Bldg 1	*code value*	*design value*	%	
Bldg 2	*code value*	*design value*	%	
(continue to include service water, equipment, etc)				

Sincerely,

Paul F. Ormond, P.E.
Energy Efficiency Engineer
Massachusetts Department of Energy Resources

Brendan Place
Clean Energy Engineer
Massachusetts Department of Energy Resources