CWWA Legislative Planning Meeting II
Thursday, November 14, 2019, 9:30 a.m. – Noon
CERC, Building #4, 805 Brook Street, Rocky Hill, CT

AGENDA

1. Welcome & Introductions

2. State Water Plan
   - Registered Diversion Reporting
   - Drought Management & Response
   - Private Wells Database

3. Lead in Drinking Water/Lead & Copper Rule

4. Municipal Utility Asset Valuation

5. Workforce Development

6. Renewable Energy Issues/Watershed Lands

7. Cybersecurity

8. Expansion of Construction Work in Progress Charges

9. Manganese

10. Small Water Systems

11. DPH Primacy Assessment Fee

12. Road Salt

13. Invasive Species

14. Water Main Installation – DOT requirements

15. Aging Infrastructure

16. Final PFAS Action Plan

17. Other Issues

LEAD & COPPER RULE

AGENCY:

Environmental Protection Agency (EPA).

ACTION:

Proposed rule, request for public comment.

SUMMARY:

The Environmental Protection Agency (EPA) proposes regulatory revisions to the National Primary Drinking Water Regulation (NPDWR) for lead and copper under the authority of the Safe Drinking Water Act (SDWA). This proposed rule provides more effective protection of public health by reducing exposure to lead and copper in drinking water. This proposed rule also strengthens procedures and requirements related to health protection and the implementation of the existing Lead and Copper Rule (LCR) in the following areas: Lead tap sampling; corrosion control treatment; lead service line replacement; consumer awareness; and public education. This proposal does not include revisions to the copper requirements of the existing LCR. In addition, this proposal includes new requirements for community water systems to conduct lead in drinking water testing and public education in schools and child care facilities.

DATES:

Comments must be received on or before January 13, 2020. Under the Paperwork Reduction Act (PRA), comments on the information collection provisions are best assured of consideration if the Office of Management and Budget (OMB) receives a copy of your comments on or before December 13, 2019.

ADDRESSES:

Submit your comments identified by Docket ID No. EPA-HQ-OW-2017-0300, at *http://www.regulations.gov*. Follow the online instructions for submitting comments. Once

submitted, comments cannot be edited or removed from *http://www.regulations.gov*. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (*i.e.,* on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *https://www.epa.gov/dockets/commenting-epa-dockets*. All submissions received must include the Docket ID No. for this rulemaking. Comments received may be posted without change to *https://www.regulations.gov/*, including any personal information provided.

FOR FURTHER INFORMATION CONTACT:

Erik Helm, Standards and Risk Management Division, Office of Ground Water and Drinking Water, U.S. Environmental Protection Agency, 1200 Pennsylvania Ave. NW, Mail Code 4607M, Washington, DC 20460; telephone number: (202) 566-1049 (TTY 800-877-8339); email address: *Helm.Erik@EPA.gov*. For more information visit *https://www.epa.gov/dwreginfo/lead-and-copper-rule*.

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

Renée D. Coleman-Mitchell, MPH
Commissioner

Ned Lamont
Governor

Susan Bysiewicz
Lt. Governor

Drinking Water Section

October 24, 2019

VIA ELECTRONIC MAIL

Ms. Alicea Charamut and
Mr. John Hudak, Co-chairs
Water Planning Council Advisory Group
wpc@ct.gov

RE: Green Energy Projects and Water Company lands

Dear Ms. Charamut and Mr. Hudak:

This is in response to your letter to the Department of Public Health ("DPH") dated July 16, 2019, regarding green energy projects and water company lands. In that letter, you requested information regarding the Commissioner of Public Health's ("Commissioner") review of changes in use of class I and II water company land for green energy projects. The following is a review of the requirements considered by the Commissioner regarding applications for changes in use of class 1 and II water company land, including changes in use for such green energy projects.

The Commissioner reviews each application for a change in use permit in accordance with *Conn. Gen. Stat.* § 25-32 and §§ 25-37d-1 through 25 -37d-9, inclusive, of the Regulations of Connecticut State Agencies, which are the statutes and regulations applicable to changes in use of class I and II water company land, and makes a decision regarding whether or not to grant such permit based on the information provided in the application. A copy of such statute and regulations are attached.

With respect to changes in use of class I water company land, pursuant to *Conn. Gen. Stat.* § 25-32(b), the Commissioner is prohibited from granting a permit for a change in use of class I land unless the water company that owns such land demonstrates that the change in use will not have a significant adverse impact upon the purity and adequacy of the public drinking water supply and is consistent with the water company's water supply plan. To determine if the change in use is appropriate, the Commissioner reviews the application received for such change in use in accordance with the performance criteria in § 25-37d-2(c) of the Regulations of Connecticut State Agencies. If the change in use is for recreational purposes that do not require intense development, for improvements for water supply purposes, for leases of existing structures, or for radio towers or telecommunications antennas on existing structures, then nothing in section 25-32, including the restrictions in section 25-32(b), prevents the Commissioner from issuing the permit. Intense development includes golf courses, driving ranges, tennis courts, ballfields, swimming pools and uses by motorized vehicles, but trails or pathways for pedestrians, motorized wheelchairs or nonmotorized vehicles are not considered intense development.

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With respect to changes in use of class II water company land, pursuant to *Conn. Gen. Stat.* § 25-32(c), the Commissioner may grant a permit subject to any conditions or restrictions in use which she may deem necessary to maintain the purity and adequacy of the public drinking water supply, giving due consideration to a number of factors, including, *inter alia*, the disturbance of ground vegetation and the effect of development of any such land. Pursuant to section 25-32(e), the Commissioner is, however, prohibited from granting a permit for a change in use of class II land unless use restrictions applicable to such land will prevent the land from being developed, the water company that owns the land demonstrates that the proposed change in use will not have a significant adverse impact upon the purity and adequacy of the public drinking water supply and that any use restrictions which the Commissioner requires as a condition of granting a permit can be enforced against subsequent owners, lessees and assignees, and the Commissioner determines, after giving effect to any use restrictions which may be required as a condition of granting the permit, that such proposed change in use will not have a significant adverse effect on the public drinking water supply, whether or not similar permits have been granted. The Commissioner is also prohibited from granting a permit if the change in use of class II land is for recreational purposes that require intense development, or for commercial, residential or industrial uses, then the commissioner may not issue a permit for the change in use. To determine if the change in use of class II water company land may have a significant adverse impact upon the present and future purity and adequacy of the public drinking water supply, the Commissioner reviews the application received for such change in use in accordance with the performance criteria in § 25-37d-2(d) of the Regulations of Connecticut State Agencies. Nothing in *Conn. Gen. Stat.* § 25-32, including the restrictions in section 25-32(e), prevents the Commissioner from granting a permit for a change in use for recreational purposes that do not require intense development, for improvements for water supply purposes, for leases of existing structures, or for radio towers or telecommunications antennas on existing structures.

Green energy project water company land change of use permits

For your information, DPH attaches a water company land permit in which DPH grants a change of use permit for a green energy project and a letter in which DPH denies a change of use permit for a green energy project. *See* Attachments 1 and 2, respectively. DPH also attaches a spreadsheet providing a list of all of the changes of use permit applications received and whether or not the Commissioner granted a change of use permit for the change of use. *See* Attachment 3.

If you have any questions or require additional information, please do not hesitate to contact me at (860) 509-7333.

Sincerely,

Lori J. Mathieu
Public Health Section Chief

Attachments

c: Heather Aaron, MPH, LNHA, Deputy Commissioner, Department of Public Health

STATUTES APPLICABLE TO WATER COMPANY LAND

Sec. 25-32. Department of Public Health jurisdiction over and duties concerning water supplies, water companies and operators of water treatment plants and water distribution systems. (a) The Department of Public Health shall have jurisdiction over all matters concerning the purity and adequacy of any water supply source used by any municipality, public institution or water company for obtaining water, the safety of any distributing plant and system for public health purposes, the adequacy of methods used to assure water purity, and such other matters relating to the construction and operation of such distributing plant and system as may affect public health.

(b) No water company shall sell, lease, assign or otherwise dispose of or change the use of any watershed lands, except as provided in section 25-43c, without a written permit from the Commissioner of Public Health. The commissioner shall not grant: (1) A permit for the sale of class I land, except as provided in subsection (d) of this section, (2) a permit for the lease of class I land except as provided in subsection (p) of this section, or (3) a permit for a change in use of class I land unless the applicant demonstrates that such change will not have a significant adverse impact upon the present and future purity and adequacy of the public drinking water supply and is consistent with any water supply plan filed and approved pursuant to section 25-32d. The commissioner may reclassify class I land only upon determination that such land no longer meets the criteria established by subsection (a) of section 25-37c because of abandonment of a water supply source or a physical change in the watershed boundary. Not more than fifteen days before filing an application for a permit under this section, the applicant shall provide notice of such intent, by certified mail, return receipt requested, to the chief executive officer and the chief elected official of each municipality in which the land is situated.

(c) The commissioner may grant a permit for the sale, lease, assignment or change in use of any land in class II subject to any conditions or restrictions in use which the commissioner may deem necessary to maintain the purity and adequacy of the public drinking water supply, giving due consideration to: (1) The creation and control of point or nonpoint sources of contamination; (2) the disturbance of ground vegetation; (3) the creation and control of subsurface sewage disposal systems; (4) the degree of water treatment provided; (5) the control of watershed land by the applicant through ownership, easements or use restrictions or other water supply source protection measures; (6) the effect of development of any such land; and (7) any other significant potential source of contamination of the public drinking water supply. The commissioner may grant a permit for the sale, lease or assignment of class II land to another water company, municipality or nonprofit land conservation organization provided, as a condition of approval, a permanent conservation easement on the land is entered into to preserve the land in perpetuity predominantly in its natural scenic and open condition for the protection of natural resources and public water supplies while allowing for recreation consistent with such protection and improvements necessary for the protection or provision of safe and adequate potable water. Preservation in perpetuity shall not include permission for the land to be developed for any commercial, residential or industrial uses, nor shall it include permission for recreational purposes requiring intense development, including, but not limited to, golf courses, driving ranges, tennis courts, ballfields, swimming pools and uses by motorized vehicles other than vehicles needed by water companies to carry out their purposes, provided trails or pathways for pedestrians, motorized wheelchairs or nonmotorized vehicles shall not be considered intense development. The commissioner may reclassify class II land only upon determination that such land no longer meets the criteria established by subsection (b) of section 25-37c because of abandonment of a water supply source or a physical change in the watershed boundary.

(d) The commissioner may grant a permit for (1) the sale of class I or II land to another water company, to a state agency or to a municipality, (2) the sale of class II land or the sale or assignment of a conservation restriction or a public access easement on class I or class II land to a private, nonprofit land-holding conservation organization, or (3) the sale of class I land to a private nonprofit land-holding conservation

organization if the water company is denied a permit to abandon a source not in current use or needed by the water company pursuant to subsection (c) of section 25-33k, if the purchasing entity agrees to maintain the land subject to the provisions of this section, any regulations adopted pursuant to this section and the terms of any permit issued pursuant to this section. Such purchasing entity or assignee may not sell, lease or assign any such land or conservation restriction or public access easement or sell, lease, assign or change the use of such land without obtaining a permit pursuant to this section.

(e) The commissioner shall not grant a permit for the sale, lease, assignment or change in use of any land in class II unless (1) use restrictions applicable to such land will prevent the land from being developed, (2) the applicant demonstrates that the proposed sale, lease, assignment or change in use will not have a significant adverse impact upon the purity and adequacy of the public drinking water supply and that any use restrictions which the commissioner requires as a condition of granting a permit can be enforced against subsequent owners, lessees and assignees, (3) the commissioner determines, after giving effect to any use restrictions which may be required as a condition of granting the permit, that such proposed sale, lease, assignment or change in use will not have a significant adverse effect on the public drinking water supply, whether or not similar permits have been granted, and (4) on or after January 1, 2003, as a condition to the sale, lease or assignment of any class II lands, a permanent conservation easement on the land is entered into to preserve the land in perpetuity predominantly in its natural scenic and open condition for the protection of natural resources and public water supplies while allowing for recreation consistent with such protection and improvements necessary for the protection or provision of safe and adequate potable water, except in cases where the class II land is deemed necessary to provide access or egress to a parcel of class III land, as defined in section 25-37c, that is approved for sale. Preservation in perpetuity shall not include permission for the land to be developed for any commercial, residential or industrial uses, nor shall it include permission for recreational purposes requiring intense development, including, but not limited to, golf courses, driving ranges, tennis courts, ballfields, swimming pools and uses by motorized vehicles other than vehicles needed by water companies to carry out their purposes, provided trails or pathways for pedestrians, motorized wheelchairs or nonmotorized vehicles shall not be considered intense development.

(f) Nothing in this section shall prevent the lease or change in use of water company land to allow for recreational purposes that do not require intense development or improvements for water supply purposes, for leases of existing structures, or for radio towers or telecommunications antennas on existing structures. For purposes of this subsection, intense development includes golf courses, driving ranges, tennis courts, ballfields, swimming pools and uses by motorized vehicles, provided trails or pathways for pedestrians, motorized wheelchairs or nonmotorized vehicles shall not be considered intense development.

(g) As used in this section, (1) "water supply source" includes all springs, streams, watercourses, brooks, rivers, lakes, ponds, wells or underground waters from which water is taken, and all springs, streams, watercourses, brooks, rivers, lakes, ponds, wells or aquifer protection areas, as defined in section 22a-354h, thereto and all lands drained thereby; and (2) "watershed land" means land from which water drains into a public drinking water supply.

(h) The commissioner shall adopt and from time to time may amend the following: (1) Physical, chemical, radiological and microbiological standards for the quality of public drinking water; (2) minimum treatment methods, taking into account the costs of such methods, required for all sources of drinking water, including guidelines for the design and operation of treatment works and water sources, which guidelines shall serve as the basis for approval of local water supply plans by the commissioner; (3) minimum standards to assure the long-term purity and adequacy of the public drinking water supply to all residents of this state; and (4) classifications of water treatment plants and water distribution systems which treat or supply water used or intended for use by the public. On or after October 1, 1975, any water company which requests approval of any drinking water source shall provide for such treatment methods as specified by the commissioner, provided any water company in operation prior to October 1, 1975, and having such source

shall comply with regulations adopted by the commissioner, in accordance with chapter 54, in conformance with The Safe Drinking Water Act, Public Law 93-523, and shall submit on or before February 1, 1976, a statement of intent to provide for treatment methods as specified by the commissioner, to the commissioner for approval. The commissioner shall adopt regulations, in accordance with chapter 54, requiring water companies to report elevated levels of copper in public drinking water.

(i) The department may perform the collection and testing of water samples required by regulations adopted by the commissioner pursuant to this section, in accordance with chapter 54, when requested to do so by a water company. The department shall collect a fee equal to the cost of such collection and testing. Water companies serving one thousand or more persons shall not request routine bacteriological or physical tests under this subsection.

(j) The condemnation by a state department, institution or agency of any land owned by a water company shall be subject to the provisions of this section.

(k) The commissioner may issue an order declaring a moratorium on the expansion or addition to any existing public water system that the commissioner deems incapable of providing new services with a pure and adequate water supply.

(l) The commissioner may issue, modify or revoke orders as needed to carry out the provisions of this part. Except as otherwise provided in this part, such order shall be issued, modified or revoked in accordance with procedures set forth in subsection (b) of section 25-34.

(m) The commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to include local health departments in the notification process when a water utility reports a water quality problem.

(n) (1) On and after the effective date of regulations adopted under this subsection, no person may operate any water treatment plant, water distribution system or small water system that treats or supplies water used or intended for use by the public, test any backflow prevention device, or perform a cross connection survey without a certificate issued by the commissioner under this subsection. The commissioner shall adopt regulations, in accordance with chapter 54, to provide: (A) Standards for the operation of such water treatment plants, water distribution systems and small water systems; (B) standards and procedures for the issuance of certificates to operators of such water treatment plants, water distribution systems and small water systems; (C) procedures for the renewal of such certificates every three years; (D) standards for training required for the issuance or renewal of a certificate; and (E) standards and procedures for the issuance and renewal of certificates to persons who test backflow prevention devices or perform cross connection surveys. Such regulations shall be consistent with applicable federal law and guidelines for operator certification programs promulgated by the United States Environmental Protection Agency. For purposes of this subsection, "small water system" means a public water system, as defined in section 25-33d, that serves less than one thousand persons and has no treatment or has only treatment that does not require any chemical treatment, process adjustment, backwashing or media regeneration by an operator.

(2) The commissioner may take any disciplinary action set forth in section 19a-17, except for the assessment of a civil penalty under subdivision (7) of subsection (a) of section 19a-17, against an operator, a person who tests backflow prevention devices or a person who performs cross connection surveys holding a certificate issued under this subsection for any of the following reasons: (A) Fraud or material deception in procuring a certificate, the renewal of a certificate or the reinstatement of a certificate; (B) fraud or material deception in the performance of the certified operator's professional activities; (C) incompetent, negligent or illegal performance of the certified operator's professional activities; (D) conviction of the certified operator for a felony; or (E) failure of the certified operator to complete the training required under subdivision (1) of this subsection.

(3) The commissioner may issue an initial certificate to perform a function set forth in subdivision (1) of this subsection upon receipt of a completed application, in a form prescribed by the commissioner, together with an application fee as follows: (A) For a water treatment plant, water distribution system or small water system operator certificate, two hundred twenty-four dollars, except there shall be no such application fee required for a student enrolled in an accredited high school small water system operator certification course; (B) for a backflow prevention device tester certificate, one hundred fifty-four dollars; and (C) for a cross-connection survey inspector certificate, one hundred fifty-four dollars. A certificate issued pursuant to this subdivision shall expire three years from the date of issuance unless renewed by the certificate holder prior to such expiration date. The commissioner may renew a certificate for an additional three years upon receipt of a completed renewal application, in a form prescribed by the commissioner, together with a renewal application fee as follows: (i) For a water treatment plant, water distribution system or small water system operator certificate, ninety-eight dollars; (ii) for a backflow prevention device tester certificate, sixty-nine dollars; and (iii) for a cross-connection survey inspector certificate, sixty-nine dollars.

(o) The commissioner may adopt regulations, in accordance with the provisions of chapter 54, that incorporate by reference the provisions of the federal National Primary Drinking Water Regulations in 40 C.F.R. Parts 141 and 142, promulgated by the United States Environmental Protection Agency, provided such regulations (1) are consistent with other regulations adopted pursuant to this section, and (2) explicitly incorporate any future amendments to said federal regulations.

(p) The commissioner may grant a permit for the lease of class I land associated with a groundwater source for use for public drinking water purposes to another water company that serves one thousand or more persons or two hundred fifty or more customers and maintains an approved water supply plan pursuant to section 25-32d, provided a water company acquiring such interest in the property demonstrates that such lease will improve conditions for the existing public drinking water system and will not have a significant adverse impact upon the present and future purity and adequacy of the public drinking water supply. Any water company requesting a permit under this subsection may be required to convey an easement that provides for the protection of the public water supply source and shall submit such easement and any provisions of the lease that pertain to the protection of the public water supply to the commissioner for approval.

(q) Notwithstanding any provision of this section, the commissioner may grant a permit for the lease or change in use of water company land to allow for telecommunications antennas, telecommunications towers, ancillary equipment, related access drives or utilities, used in the provision of personal wireless services, as defined in 47 USC 332(c)(7), if the commissioner determines such lease or change in use will not have an adverse impact on the purity and adequacy of the public drinking water supply and that any use restrictions which the commissioner requires as a condition of granting a permit can be enforced against subsequent owners, lessees and assignees. The permit application shall include, but not be limited to, documentation on the extent of other alternative sites considered unsuitable by the provider of wireless services and a finding by the commissioner that such lease or change in use of water company land will not have a significant adverse impact upon the purity and adequacy of the public drinking supply. Any permit granted under this subsection shall be subject to any conditions or restrictions which the commissioner may deem necessary to maintain the purity and adequacy of the public drinking water supply.

(1949 Rev., S. 4015; 1967, P.A. 691, S. 2; P.A. 74-303, S. 1; P.A. 75-513, S. 1, 5; P.A. 76-268; P.A. 77-606, S. 4, 10; 77-614, S. 323, 587, 610; P.A. 78-303, S. 71, 85, 136; P.A. 79-192; 79-522, S. 1, 2; P.A. 81-472, S. 139, 159; P.A. 85-336, S. 1, 6; P.A. 88-172, S. 3; 88-354, S. 4; P.A. 89-301, S. 3; P.A. 93-381, S. 9, 39; P.A. 95-211, S. 1; 95-257, S. 12, 21, 58; 95-329, S. 1, 31; P.A. 96-100, S. 2; P.A. 97-304, S. 21, 31; June Sp. Sess. P.A. 99-2, S. 63; P.A. 00-90, S. 1, 3; 00-203, S. 7, 11; P.A. 01-204, S. 4, 29; June Sp. Sess.

P.A. 01-9, S. 73, 131; P.A. 03-252, S. 15; May Sp. Sess. P.A. 04-2, S. 45; P.A. 06-53, S. 3; P.A. 09-232, S. 47, 48; P.A. 11-242, S. 71; P.A. 12-197, S. 42; P.A. 13-298, S. 62; P.A. 14-231, S. 12; P.A. 17-10, S. 5.)

Sec. 25-37a. Legislative finding and purpose.

The General Assembly finds and declares that an adequate supply of pure water is and will always be essential for the health and safety and economic well-being of the state, that lands acquired for public water supply purposes are and will in the future be necessary to protect the public water supply notwithstanding the availability of water filtration plants; that some of such lands have been acquired by water companies having the power of eminent domain, that such lands are in imminent danger of being disposed of by water companies for residential and commercial development, that such lands constitute a significant portion of the remaining undeveloped and open space lands in close proximity to the urbanized areas of the state, and that it is in the public interest that there be established criteria for the orderly disposition of such lands. The General Assembly further finds and declares that in order to protect the purity and adequacy of the water supply the Department of Public Health should be directed to revise its procedure for the review of applications to sell water company land located on public drinking water supply watersheds, that the disposition of such land prior to the revision of application review procedures would jeopardize the public health and welfare, and that therefore the prohibition against sale or development of water company land located on the watershed should be extended for a period of three years from June 26, 1977.

(P.A. 77-606, S. 1, 10; 77-614, S. 323, 587, 610; P.A. 78-303, S. 85, 136; P.A. 79-294, S. 1, 4; P.A. 93-381, S. 9, 39; P.A. 95-257, S. 12, 21, 58.)

Sec. 25-37b. Definitions.

As used in sections 25-32 and 25-37a to 25-37e, inclusive, "critical components of a stream belt" means (1) the watercourse of a defined stream including banks, beds and water; (2) land subject to stream overflow; (3) associated wetlands, and (4) shorelines of lakes and ponds associated with the stream. "First-order stream" means a stream which directly enters a reservoir; "purity and adequacy of public drinking water supply" means the quality and quantity of public drinking water as determined by the Commissioner of Public Health under subsection (d) of section 25-32; "water company" means any water company as defined in section 25-32a, and "commissioner" means the Commissioner of Public Health.

(P.A. 77-606, S. 2, 10; 77-614, S. 323, 587, 610; P.A. 78-303, S. 85, 136; P.A. 79-631, S. 103, 111; P.A. 88-357, S. 17; P.A. 93-381, S. 9, 39; P.A. 95-257, S. 12, 21, 58.)

Sec. 25-37c. Regulations. Classification of land owned by or acquired from a water company.

The Department of Public Health shall adopt, in accordance with chapter 54, regulations establishing criteria and performance standards for three classes of water-company-owned land.

(a) Class I land includes all land owned by a water company or acquired from a water company through foreclosure or other involuntary transfer of ownership or control which is either: (1) Within two hundred and fifty feet of high water of a reservoir or one hundred feet of all watercourses as defined in agency regulations adopted pursuant to this section; (2) within the areas along watercourses which are covered by any of the critical components of a stream belt; (3) land with slopes fifteen per cent or greater without significant interception by wetlands, swales and natural depressions between the slopes and the watercourses; (4) within two hundred feet of groundwater wells; (5) an identified direct recharge area or outcrop of aquifer now in use or available for future use, or (6) an area with shallow depth to bedrock,

twenty inches or less, or poorly drained or very poorly drained soils as defined by the United States Soil Conservation Service that are contiguous to land described in subdivision (3) or (4) of this subsection and that extend to the top of the slope above the receiving watercourse.

(b) Class II land includes all land owned by a water company or acquired from a water company through foreclosure or other involuntary transfer of ownership or control which is either (1) on a public drinking supply watershed which is not included in class I or (2) completely off a public drinking supply watershed and which is within one hundred and fifty feet of a distribution reservoir or a first-order stream tributary to a distribution reservoir.

(c) Class III land includes all land owned by a water company or acquired from a water company through foreclosure or other involuntary transfer of ownership or control which is unimproved land off public drinking supply watersheds and beyond one hundred and fifty feet from a distribution reservoir or first-order stream tributary to a distribution reservoir.

(P.A. 77-606, S. 3, 10; 77-614, S. 323, 587, 610; P.A. 78-303, S. 85, 136; P.A. 79-294, S. 2, 4; P.A. 93-381, S. 9, 39; P.A. 95-257, S. 12, 21, 58; 95-329, S. 3, 31; P.A. 96-180, S. 93, 166.)

Sec. 25-37d. Commissioner to adopt regulations re permit applications. Referral to consultant. Appointment of professional review team.

Within two years after June 26, 1977, the commissioner shall adopt regulations in accordance with chapter 54 for the review of permit applications. Such procedure shall include a standard application form, a public hearing and enforcement provisions. A permit application shall be deemed complete if the commissioner does not request additional information within forty-five days after the date on which the application was submitted or, in the event that additional information has been requested, upon the submission of such information. The commissioner may request further information after the application has been deemed complete if the need for such information was not apparent within forty-five days after submission of the application. If, in the judgment of the commissioner, the proposed sale, lease, assignment or change in use of class II land may have a significant adverse impact upon the applicant's water supply, said commissioner may, within thirty days of his receipt of a complete permit application, refer such application for detailed review to a consultant chosen by the commissioner, with skills in the fields of water supply, hydrology, aquatic biology, forestry, geology, planning or other related fields. The commissioner shall notify the applicant of such referral. The fee for such consultant shall be paid by the applicant. If the commissioner does not refer the application to a consultant pursuant to the provisions of this section, the commissioner shall refer such application to a professional review team appointed by said commissioner, consisting of a professional from the staff of the Department of Energy and Environmental Protection with expertise in one of the following areas: Water supply, hydrology, aquatic biology, forestry, geology or other related fields; a professional planner recommended by the chief executive officer of the town or towns in which the land proposed for disposition is located; a professional planner from the staff of the Office of Policy and Management; an appointee from the staff of the Department of Public Health and up to three other experts in the public health field, provided nothing in this section shall be construed to prevent the commissioner from referring such application to both a consultant and a professional review team. No appointee or consultant shall serve at the time of his appointment in the employ of the applicant. Such team or consultant shall evaluate the impact of the proposed sale, lease, assignment or change in use of land upon the purity and adequacy of the water supply under the most severe climatic conditions and its ability to meet current drinking water standards adopted by the Department of Public Health.

(P.A. 77-606, S. 5, 10; 77-614, S. 19, 323, 587, 610; P.A. 78-303, S. 85, 136; P.A. 84-342, S. 7, 13; P.A. 90-292, S. 1; P.A. 93-381, S. 9, 39; P.A. 95-211, S. 2; 95-257, S. 12, 21, 58; P.A. 11-80 S. 1, 80.)

Sec. 25-37e. Duties of commissioner re permit applications.

Within sixty days after the receipt of a complete permit application, the Commissioner of Public Health shall issue a written decision granting or denying the permit and setting forth the reasons for his decision, provided, if the commissioner has utilized the services of a consultant or a professional review team as provided for by section 25-37d, such consultant or review team shall submit to said commissioner, within ninety days of his receipt of such application, a written report of its findings, and said commissioner shall issue his decision within one hundred twenty days of his receipt of such application or within one hundred sixty-five days of the initial submission of the application. The commissioner shall forward a copy of his decision to the applicant, the Public Utilities Regulatory Authority, the Department of Energy and Environmental Protection and the chief executive officer of the town in which the land is located. If no decision is issued within one hundred twenty days after receipt of a complete application or within one hundred sixty-five days of the initial submission of the application, the applicant may submit a written request to the commissioner to issue the permit. If the commissioner does not issue a decision within forty-five days after the submission of such a request, the permit shall be deemed to have been granted.

(P.A. 77-606, S. 6, 10; 77-614, S. 162, 323, 587, 610; P.A. 78-303, S. 85, 136; P.A. 80-482, S. 183, 348; P.A. 90-292, S. 2; P.A. 93-381, S. 9, 39; P.A. 95-211, S. 3; 95-257, S. 12, 21, 58; P.A. 11-80, S. 1.)

Chief Cybersecurity Risk Officer
55 Farmington Avenue
Hartford, Connecticut 06105
October 10, 2019

Honorable Ned Lamont, Governor, State of Connecticut
Co-Chairs, Vice Chairs and Ranking Members, Committee on Energy and Technology
Acting Connecticut Consumer Counsel Richard E. Sobolewski

Honorable Connecticut Officials:

Four representatives of the State of Connecticut and four Connecticut public utilities have completed the third annual cybersecurity review of Connecticut's electricity, natural gas and water public utilities. This letter conveys their report.

Our review followed the agreed process established in 2016: that the proceedings and information shared are to remain confidential to protect each company's cybersecurity defenses, and that any information made public will be done by explicit consent of each company. The State of Connecticut participants and the four participating utilities approved this report. The State of Connecticut team was:

- Arthur House, Chief Cybersecurity Risk Officer representing the Public Utilities Regulatory Authority (PURA);
- Stephen Capozzi, PURA Public Utilities Engineer, representing the Public Utilities Regulatory Authority (PURA);
- David Geick, Director of Information Technology Security Services, Bureau of Enterprise Systems & Technology, Department of Administrative Services; and
- David Palmbach, Intelligence Analyst, Connecticut Intelligence Center

The four participating utilities were:

- Aquarion;
- Avangrid;
- Connecticut Water; and
- Eversource

The following are some of the key points in the 2019 Annual Review Report:

- Connecticut's critical infrastructure companies took seriously the increased threat levels they faced during the past year and appear to have thwarted the threats they identified. Utilities improved their cybersecurity defenses, invested more in resilience and added to their human resources dedicated to cybersecurity.

- The four Connecticut officials conducting the 2019 annual review concluded that the four utilities they reviewed are taking adequate defense measures to protect themselves against their perceived threats.

- The stark 2018 U.S. Intelligence Community warnings of cybersecurity threats to our national critical infrastructure continued during 2019. Current and former intelligence officials offered troubling public statements regarding the extent and severity of nation state threats against the American energy sector. Among their warnings were that nation states can penetrate any computer and Internet system, and that the more skilled actors can move from compromise of communications systems to digital implantation in operating systems. In September 2019, three former Secretaries of the Department of Homeland Security judged that the country "risks calamity if the United States does not step up its game."

- The past year saw extensive, new work to bolster Connecticut public utility cybersecurity resilience. Phishing, spear phishing, threats to cloud information storage and insider threats were often cited as among the most worrisome threats faced. The companies also reported greater attention to human resources including finding cybersecurity personnel, vetting the hiring of all employees and managing insider threats to security compromise. Supply chain management and vendor vetting received increased scrutiny. The companies sought and received greater cooperation from federal authorities, trade associations and other companies. There remains room for more extensive collaboration with the Connecticut Intelligence Center.

- An unresolved question demanding federal attention is the distance between reported Intelligence Community assessments of the extent and depth of critical infrastructure cyber penetration and the fact that Connecticut utilities report no evidence of breaches despite serious, intense efforts to detect and deflect such penetration. If American public utilities including ours in Connecticut are as compromised as Intelligence Community officials assert, and if those utilities, despite arduous, serious, good-faith efforts to detect and eliminate threats do not find evidence of penetration, they need and deserve U.S. Government timely and detailed information sharing.

All four Connecticut utilities participating in this review explicitly affirm that neither the Department of Homeland Security nor any other federal agency has not notified them of cyber compromise.

The State of Connecticut officials and the Connecticut public utilities participating in the 2019 critical infrastructure review concur in this report. It is a consensus document. No language information, statement or finding is intended to reflect a specific fact or situation pertaining to any particular company.

Sincerely,

Arthur H. House

Arthur H. House
Chief Cybersecurity Risk Officer, State of Connecticut

Copies:

Commissioner Katie S. Dykes, Department of Energy and Environmental Protection
Chair Marissa P. Gillett, Public Utilities Regulatory Authority
Commissioner Josh Geballe, Department of Administrative Services
Commissioner James C. Rovella, Department of Emergency Services and Public Protection
Chief Information Officer Mark Raymond

October 10, 2019

Connecticut Critical Infrastructure 2019 Annual Report

Executive Summary

Connecticut's critical infrastructure companies took seriously the increased threat levels they faced during the past year and appear to have thwarted the threats they identified. Utilities improved their cybersecurity defenses, invested more in resilience and added to their human resources dedicated to cybersecurity. The four Connecticut officials conducting the 2019 annual review concluded that the four utilities they reviewed are taking adequate defense measures to protect themselves against their perceived threats.

The stark 2018 U.S. Intelligence Community warnings of cybersecurity threats to our national critical infrastructure continued during 2019. Current and former intelligence officials offered troubling public statements regarding the extent and severity of nation state threats against the American energy sector. Among their warnings were that nation states can penetrate any computer and Internet system, and that the more skilled actors can move from compromise of communications systems to digital implantation in operating systems. In September 2019, three former Secretaries of the Department of Homeland Security judged that the country "risks calamity if the United States does not step up its game."

The past year saw extensive, new work to bolster Connecticut public utility cybersecurity resilience. Phishing, spear phishing, threats to cloud information storage and insider threats were often cited as among the most worrisome threats faced. The companies also reported greater attention to human resources including finding cybersecurity personnel, vetting the hiring of all employees and managing insider threats to security compromise. Supply chain management and vendor vetting received increased scrutiny. The companies sought and received greater cooperation from federal authorities, trade associations and other companies. There remains room for more extensive collaboration with the Connecticut Intelligence Center.

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The 2019 Review Process

Avangrid, Eversource Energy, Aquarion Water Company and Connecticut Water Company held review sessions with four State of Connecticut officials during July, August and September 2019 to review their respective states of cybersecurity resilience. The participating Connecticut officials were:

- Arthur House, Chief Cybersecurity Risk Officer;
- Stephen Capozzi, Public Utilities Engineer, Public Utilities Regulatory Authority;
- David Geick, Director of Information Technology Security Services, Bureau of Enterprise Systems & Technology, Department of Administrative Services; and
- David Palmbach, Intelligence Analyst, Connecticut Intelligence Center.

Chief Executive Officers or senior managers led the company review session teams, which normally included ten to fourteen participants. The professional positions represented included cybersecurity leadership, physical and cyber risk management, operations, finance, human resources, network management and infrastructure services, customer service, threat and incident response management, and law, government relations and regulatory affairs management.

Threats and Challenges

2018 had seen two major disclosures of threats posed to U.S. critical infrastructure management. The first was the March 2018 Department of Homeland Security (DHS) and Federal Bureau of Investigation (FBI) warning of Russian involvement in cyber attacks on

U.S. infrastructure to target commercial networks and stage malware, spear phishing and remote access into energy sector networks. The second was a July 2018 update stating that that there were hundreds of victims of Russian military intelligence attacks including infiltration of power plant control rooms and control of parts of the electricity grid.

Such disclosures continued in 2019. United States Intelligence Community leaders and former intelligence officials made remarkable public statements regarding the extent and severity of nation state threats against the American energy sector. Two consistent themes of these statements are (1) that nation states with investment of money and time can penetrate any computer and Internet system; and (2) that the more skilled actors can move from compromise of communications systems to digital implantation in operating systems.

The Director of National Intelligence in the January 29, 2019 statement for the record of the Worldwide Threat Assessment of the U.S. Intelligence Community offered stark assessments of adversary nation state cyber capabilities, concluding that "For years, they have conducted cyber espionage to collect intelligence and target our critical infrastructure to hold it at risk."

Specifically, China "has the ability to launch cyber attacks that cause localized, temporary disruptive effects on critical infrastructure – such as disruption of a natural gas pipeline for days to weeks – in the United States." Russia "is now staging cyber attack assets to allow it to disrupt or damage U.S. civilian and military infrastructure during a crisis" and "has the ability to execute cyber attacks in the United States that cause localized, temporary disruptive effects on critical infrastructure – such as disruption an electrical distribution network for at least a few hours…"

The report assesses that Iran is "attempting to deploy cyber attack capabilities that would enable attacks against critical infrastructure in the United States and allied countries." North Korea is a significant threat to financial institutions, but also "retains the ability to conduct disruptive cyber attacks." Non-state and unattributed actors "could increasingly disrupt U.S. critical infrastructure."

By all accounts, the volume, sophistication, creativity and persistence in efforts to penetrate and gain control of U.S. utilities and their services all were greater in 2019 than in the past. Former Deputy Director of the National Security Agency Chris Inglis reported a significant increase in the sheer number of probes and attempted attacks on American critical infrastructure. In May 2019 he stated that Russian hackers "are managing 200,000 implants in U. S. critical infrastructure." In September 2019, three former Secretaries of the Department of Homeland Security concurred that the U.S. Government was not doing enough to defend against cyber attacks and that the country "risks calamity if the United States does not step up its game."

Intelligence officials in informal discussions and public presentations have made the point that those in the energy generation, transmission and distribution businesses cannot

presume that barriers to Russian penetration exist or are working. They assert that the implantations have gone beyond communications, into what they call "administration," meaning beyond simple internal and external communications and into management systems. Generation and transmission activities are identified as being the most directly penetrated and compromised.

Cybersecurity awareness and threat information sharing also increased substantially, including constructive work from the Multi-State Information Sharing and Analysis Center (MS-ISAC) and the Electricity Information Sharing and Analysis Center (E-ISAC).

During the year, the Department of Homeland Security increased its outreach to Connecticut utilities, established or reinforced contacts and offered resources to assist in detection and control of threat vectors. DHS created the Cybersecurity and Infrastructure Security Agency (CISA) at the end of 2018, "…working with partners to defend against today's threats and collaborating to build more secure and resilient infrastructure for the future." Some Connecticut utilities also received limited classified information briefings from the FBI. Utilities also received assistance from U.S. National Laboratories during 2019.

All Connecticut utilities participating in this report have seen more extensive, proactive communication with the federal government to identify and defend against cyber penetration. Yet, national security officials insist that utility executives and many players with high-level security clearances are not aware of the extent of ongoing operations penetration and implantation.

If that is indeed the case, the result is a significant national security vulnerability partially addressed by domestic authorities but not fully communicated beyond the boundaries of the national security intelligence agencies. While local distribution companies such as those in Connecticut make serious, strenuous efforts to find and root out foreign implantations, their work will necessarily be incomplete until intelligence sharing reflects partnership at levels not currently in place.

All four Connecticut utilities participating in this review explicitly affirm that neither the Department of Homeland Security nor any other federal agency has not notified them of cyber compromise.

Connecticut utilities manage their cybersecurity defense programs fully aware of serious attempts to compromise their operations. Some use the most modern, effective defense systems available. All receive at least some degree of federal government support, and all work with trade associations and other companies to protect themselves. Yet this work proceeds while top national intelligence personnel warn that not all information is being shared, that nation states and other actors can compromise American utilities, and that, in fact, their administrative systems currently bear foreign presence.

In recent years, Connecticut utility officials have increased communications with federal authorities, especially the Department of Energy, and expressed appreciation for the

enhanced cooperation. The Connecticut officials conducting this annual assessment and some of the Connecticut utility executives share the understanding that there is scope for more extensive federal partnerships, underscored by statements from current and previous federal leaders who have warned of and lamented foreign penetration. National Security Agency General Counsel Glenn S. Gerstell gave voice to this frustration in September 2019 in stating: "The simple fact of the matter is that no nation has yet devised an effective solution to the conundrum of how to respond in a definitive and dispositive way to another nation state's malicious cyber activity."

Connecticut utilities displayed seasoned, mature responses to the question as whether they were more or less resilient to the prospect of a cyber attack than they were last year. Among the areas cited as deserving increased attention, utilities pointed to the need for more security cloud computing and protection against compromise from internet-connected devices. In addition to having more names to call in federal agencies for help with specific problems, Connecticut utilities continue to bring on board more personnel with higher-level security clearances than in the past – or are able to secure such clearances for existing personnel. Utilities find more briefings available with some redundancy in those briefings, a situation inevitable in the general effort to structure more extensive and productive classified information sharing.

Specific Threats Reported by Connecticut Utilities

Aggression against Connecticut utilities grew during the past year, with an increased number of threat actors, larger volume of attempted penetrations and introduction of new, more sophisticated attack weaponry. Nation states remain active, with most threats coming from the same four nations previously reported: Russia, China, Iran and North Korea. One utility recorded threat attempts from more than 1,000 distinct actors (which may include sources using multiple identities). As in the past, threat management is constant work, placing considerable pressure on utility security management teams.

As in past years, during 2019, phishing and spear phishing attempts to gain entry into communications systems remained among the top threats. The companies all reported increased attention to insider threats – the potential for security compromise caused by employees or trusted vendors and contractors.

A new factor in 2019 has been the growth of machine-to-machine threats, met by concurrent machine-to-machine defenses. A rough parallel is the scenario the Navy faces with the former pattern of one aircraft seeking to bomb a ship replaced by the modern scenario of a large number of computer-managed attack missiles met by computer-managed defense counter measures.

Utilities reported that increased use of cloud storage has brought new forms of cybersecurity problems threatening information compromise or diversion of vital information to unauthorized places.

Main Points and Findings

Managing cybersecurity threats became more difficult during the past year. One reason was that some companies have augmented their searches for nation state, signature-based, specific attack technology with greater reliance on artificial intelligence to detect behavior suggesting or indicating compromise. In recent years, companies have moved from closely holding and protecting information regarding cyber attacks and defenses to settings of better situational awareness, more extensive information sharing and comparison of effective detection techniques. Companies share both information regarding threats and effective counter measures through more timely and specific briefings with federal resources, trade associations and specialized consultants.

Despite such advances, utilities still face the security challenge of protecting substations spread across an operating area, monitored by surveillance systems and requiring periodic human inspections. Monitoring obviously seeks to pay greatest security attention to the most critical facilities. Ensuring both cyber and physical substation security is demanding; every company must decide what level of time and effort is appropriate, realizing that complete coverage is not possible. The utilities continue to seek additional ways to strengthen the dual problem of physical and cyber security including advances in verification software, social engineering advances and the use of drones.

There is room for improved collaboration between Connecticut utilities and the Connecticut Intelligence Center. Connecticut utilities understandably protect information regarding external penetration attempts and their ability to thwart them. At the same time, CTIC's efforts to understand and share information regarding cyber aggressions against Connecticut companies would be improved by more extensive information exchange.

Corporate Culture

Corporate culture is a reflection in employee behavior of company leaders' priorities and values. That which is taken seriously inevitably starts with honest, heartfelt CEO exhortation. In all Connecticut utilities, boards of directors state their interest in cybersecurity, and executive management conveys that concern to employees. Some companies are more adamant and systemic in emphasizing cybersecurity, but in varying degrees cybersecurity awareness is part of every Connecticut utility's culture. One utility continues to start every employee meeting – on any topic – with a cybersecurity tip.

The Edison Electric Institute (EEI) has published a self-assessment product on the culture of security, which one utility uses to measure awareness and craft supplementary actions. Corporate culture vehicles include messages from management and discussions with

supervisors, security webinars, training sessions, sharing of intranet articles posters, emails and videos.

One executive described the unfinished effort to instill a healthy cybersecurity culture by saying, “We’re getting there.” Another reported the use of sanctions and disciplinary actions for employees insufficiently cognizant of the need for healthy cybersecurity habits. Efforts to create and sustain high levels of cybersecurity practices appear to be making progress but are still incomplete. The need to detect and counter insider threats was an enhanced area of security concern during 2019, related to corporate culture.

One interesting change has been the growing redundancy in alert communications. Utilities find that multiple alert paths result in similar, often overlapping warnings for the same event or vulnerability, from their internal detection, an Information Sharing and Analysis Center (ISAC), the Connecticut Intelligence Center (CTIC) or from consultants, government and private resources. Utilities report satisfaction in receiving concurrent threat communications. In the future, these redundancies may be combined or refined, but in the initial stages of detection they welcome information sharing and in turn convey messages to vendors and customers.

Human Resources

Insider threat was an area of particular attention during 2019, perhaps related to the success of other perimeter defenses and by the creativity of attackers trying to exploit new vulnerabilities. External probing of utility employees places a new burden on utilities to vet new employees more carefully and to verify the integrity of the existing workforce. Connecticut’s defense industry has long experience in reviewing the security of employees working in sensitive areas; their practices are becoming more commonplace in utilities, with some reporting significantly enhanced background checks prior to employment.

Hiring, training and retaining cybersecurity personnel has moved from a relatively small focus of human resource departments in past years to a high priority effort today. Utilities have rightly emphasized the need to hire and retain cybersecurity professionals to manage system architecture and network security across information technology (IT) and operational technology (OT) environments.

Hiring cybersecurity professionals has become more difficult challenge for smaller utilities. Nevertheless, the past year saw a marked increase in internships and in efforts to recruit needed talent through relationships with Connecticut and other New England colleges. Still, utilities noted successful recruitment and retention of cybersecurity personnel as an ongoing concern.

There has been a net increase in the number of utility officers with security clearances, at both the top secret and secret levels.

Some Connecticut utilities increasingly look to consultants to manage their cybersecurity activities. The ability to draw on the resources of a consultancy and to benefit from its work in other sectors sometimes outweighs the disadvantage of in-depth company-specific experience.

Phishing and Spear Phishing

Phishing and spear phishing remain prevalent and dangerous, the single most common means to attempt entry into a company's IT and OT systems, and defenses to prevent such entry continue to receive considerable attention. Sustained, custom-tailored spear phishing attacks are difficult to thwart. 2019 saw increasingly clever spear phishing, some of which succeeded in compromising their targets before being contained. One company used an example of a genuine spear phishing penetration against a senior executive as a teaching example.

One utility reported detection of ongoing phishing attempts to extract money from employees: frauds appearing to originate from senior officers asking that funds be sent to a given account or asking for personal financial information and account numbers. Such activity is called "Business Email Compromise" and is a significant threat facing the business community.

All utilities have phishing training programs, some expanded to include awareness of suspicious attachments and dangerous data entry threats. Some companies do post-training tests to evaluate the training. Even with such efforts, in some cases more than ten percent of employees have continued to click on false messages.

Most companies now have "report phishing" buttons on their email applications, enabling employees to forward suspicious emails for review. This simple feature enables employees to help in detection of and response to phishing attempts. Some companies offer "shark awards" to the first employees to detect "phishing." Another innovation is establishment of more clear identification of external sources of emails and internet traffic, so recipients can more reliably see from whom email is coming.

Utilities are experimenting with solutions for employees who do not learn the required discipline to decline phishing attempts. Remedies include having supervisors talk to employees who fail phishing tests. Another is to identify employees who require advanced, remedial training. The problem of recidivism remains, and utilities will eventually need to decide whether lack of phishing awareness is grounds for suspension or dismissal.

Consulting Services

Utilities increasingly use national information sharing and analysis centers for assistance in becoming aware of new threats, in addition to their roles as information resources. Private consultants are more important to security than ever, as cybersecurity is increasingly a

private security domain. Aside from national security considerations, the invention of new cyber programs and malware and the defenses against new dangers largely take place in private companies. The scope and technical demands of detecting and managing cyber threats present challenges beyond the in-house capabilities of Connecticut utilities. In past years, consultants were used especially to bolster firewalls and detect vulnerabilities. 2019 saw increased consultant use for a broad range of cybersecurity needs, especially to recommend future cybersecurity investments.

C2M2 Results and Discussion

Connecticut's annual cybersecurity process allows utilities to select their own standard of progress measurement. To date all have elected to use the Cybersecurity Capabilities Maturity Model, or "C2M2."[1] During the first two years of using C2M2, all utilities saw growth toward greater maturity, albeit at different rates and in different areas, in the ten C2M2 cybersecurity domains. Some used external consultants to assist in C2M2 evaluation.

All utilities continued on their prior growth paths. One utility conducts semi-annual C2M2 assessments and uses the results to identify areas of future improvement and set future goals. Some, however, reported that their self-evaluation scores for the C2M2 domains have tended to stabilize at the upper levels as they approach the highest maturity C2M2 levels.

Both the challenge difficulty and the ability to meet the challenge continued to evolve in a pattern suggesting constant adjustment. Some utilities question whether C2M2 should continue to be their standard to progress measurement in future years. They acknowledge that should they decide to change standards, they would bear the burden of selecting and managing a replacement standard. Some have looked toward the National Institutes of Standards and Technology Cybersecurity Framework standards as possible future measurement standards, replacing C2M2.

For the present, all utilities still found value in performing the C2M2 self-assessment to identify and prioritize cybersecurity program needs.

C2M2 reviews cover a wide range and support ongoing management adjustments. One specific example of a lesson learned was the need to restrict access to certain accounts to management personnel with elevated security privileges.

Investments

[1] The ten domains covered by the C2M2 self-assessment are: Cybersecurity Program Management, Risk Management, Asset Management, Identity and Access Management, Threat and Vulnerability Management, Situational Awareness, Information Sharing and Communications, Event and Incident Response, Supply Chain and External Dependencies Management and Workforce Management.

Discussion of cybersecurity investments involves both company priorities and the ability to have money spent on those priorities receive regulatory authority approval. In the United States, both utilities and regulators face the difficult challenge of keeping up to speed with technical improvements in cybersecurity detection and management. The normal process is for the utility to decide that a particular investment is wise and would enhance security, to make the investment and then through a rate case to seek approval from the regulator to include that expenditure in the rate base. Regulators face the increasingly demanding challenge of understanding new technology and determining appropriateness for rate base inclusion.

Increased attention to more complex cybersecurity challenges may become expensive. The need for both company and regulator to stay up to speed regarding investment opportunities adds new dimension to a classic regulatory tension. Along with the decision to make such investments, utilities need to keep educating the regulators as to their necessity and usefulness. Connecticut's annual cybersecurity review process investigates and assesses some utility cybersecurity investments but does not replace the core process of regulatory review.

Investment opportunities proliferate in the American tradition of private sector innovators finding new solutions. Connecticut utilities usually reported several categories of cybersecurity investment. Prominent among them in 2019 were design, engineering and implementation of new or improved detection and management systems. There was special attention to security control systems to assess and fill detection gaps, risk assessment, focus on insider threat challenges, user behavior, end-point customer protection, incident response and firewall management. Utilities also noted adding security architecture to their cyber programs, greater investment in people, time allocated to security work, systems development and vulnerability management.

Supply Chains

As utilities seek to solve new cyber problems, the need to rely on third-party vendors in the electricity and natural gas areas is growing markedly. Utilities have to determine how a new piece of equipment, software product or process would affect operations and networks. One utility identifies more than 200 suppliers receiving special scrutiny and has added personnel to manage the process. With such growth comes the need to strengthen supply chain management and tighten up procurement to examine purchases and assess the vulnerabilities that accompany others' products and services.

Utilities are finding interesting solutions to growing supply chain management security concerns. Among them are developing legal and technical processes for testing devices and using federal assistance to test devices that a manufacturer or intellectual property owner would not otherwise allow. Another is performing investigations into supply companies to

evaluate specific product or service risks and also to determine who owns the company offering the sale. Corporate ownership was an area of increased focus during 2019.

Third-party vetting is changing procurement practices and has become a major cybersecurity activity with more systemic monitoring of external suppliers, including international comparisons and use of code verifications. Vendor reaction to enhanced vetting requirements ranges from surprise and need for education to sophisticated incorporation of cybersecurity assurances in requests for business. Vetting is both done on a case-by-case basis and is more automated, reaching beyond third-party to fourth-party components.

Services are available to offer supplier scorecards with grades and assessments of procurement control and risk factors. Active use of external rating services to vet and shape the customer relationship with suppliers has led to terminating vendors and adding new ones based on cybersecurity concerns. One utility reports a net decrease in the number of vendors used because some have not been able to ensure adequate cybersecurity protections.

Of all the areas addressed during 2019, Connecticut utility consensus was that supply chain management was the area of greatest progress. Nevertheless, all companies recognized that supply chain vetting continues to grow in complexity.

Penetration Testing

Terms of reference for penetration testing and use of the results have evolved in recent years. A few years ago, when awareness of cyber threats was in its initial stages, companies would set defenses and retain penetrators to see if they could enter information technology or operating systems (or both). It has become apparent that any company can be penetrated if the force seeking entry devotes enough time and resources to doing so. A good penetration team today looks at all the possible ways to break into IT and operation systems, executes entry, reports on how it was done and identifies changes needed to remedy insufficient protections.

Not all utilities are satisfied with the penetrators hired to do this work. Some saw the task as one of general defense assessment rather than simulation of attack. Others include utility staff in their work, thereby enabling the utility to see how vulnerabilities are discovered. All utilities used penetration testing to identify vulnerabilities and pathways to breaches, but not all utilities focused on testing of operations technology and consequent remediation. The utilities did respond to penetration test findings, which included recommendations regarding security architecture, patches, attention to substations and enhanced security for gas pipeline facilities.

Manual Start-Ups

Most utility operations are computer managed. The 2015 attack on Ukraine's electric distribution system demonstrated that when systems are taken off-line, sometimes the only way to restore power is the old-fashioned way, by sending personnel to facilities and substations and using manual, non-computer managed processes to restart operations. Connecticut utilities all practiced manual restarts during 2019. One company identified 17 distinct exercises requiring non-computer, personnel-generated restarts.

During the past several years, as utilities have transitioned to computer management of operations and manual operations have atrophied, there are fewer employees with manual operations experience. While training in manual operations does continue, there are simply not enough employees able to run all facilities manually. In the event of a cyber compromise shutting down facilities, utilities will need to identify priorities for human attention and startup, recognizing that it will not be possible to restart them all.

Cyber Exercises

In recent years, both public and utility perception of critical infrastructure cybersecurity has advanced from being somewhat esoteric problem shared by utilities and some government agencies to much wider issue of community and national concern. The security of our public utility services is now seen as a legitimate matter of focus by the utilities and federal, state and local governments, security officials, trade associations and first responders. Indeed, in certain circumstances a cyber threat is a matter of national security requiring federal and regional recovery assistance.

The most valuable exercises tend to be those that begin with existing strategies and action plans and move to address threats not identified ahead of time. Companies are compelled to adjust to new scenarios. Rehearsal of the anticipated and reaction to the new with subsequent assessment and candid critique enable lessons learned to form a base for future improvement.

All Connecticut utilities participated in cyber-related exercises during the past year. Among the specific challenges posited were the ability to sustain service delivery, business continuity, response to malware introduction and use of ransomware and manual operations restart. Lessons learned included the need to know the exact location of all servers and how they are controlled.

As threat scenarios evolve, the need to practice response with adequate sophistication also increases. In future years exercises will need increasingly to address the full range of potential community disruption, going well beyond emergency exercises practiced to date.

Post-Compromise Recovery Plans

All utilities maintain emergency response plans. Section 16-32e of the General Statutes of Connecticut requires the four utilities reviewed here (among other public service

companies) to file with the Public Utilities Regulatory Authority every two years an updated plan for restoring utility service interrupted as a result of an emergency. PURA last received and reviewed emergency plans in 2018. See Decision dated August 29, 2018 in Docket No. 18-03-29 2018 PURA Review of Connecticut Public Service Company Plans for Restoration of Service that Is Interrupted as Result of an Emergency. PURA, DESPP and the Department of Public Health (DPH) will next review undated plans in by 2020. Each company should expect to update its respective plans to include any new and relevant cybersecurity information.

Electric distribution companies must have post-compromise of critical infrastructure recovery plans that meet "NERC CIP" – the North American Electricity Reliability Corporation (NERC) critical infrastructure protection (CIP) requirements. The requirements are "designed to secure the assets required for operating North America's bulk electric system." A key part of the NERC CIP is maintenance of updated plans and updated lists of people with assigned responsibilities that move to action plans and exercises.

Connecticut utilities conduct national and trade association exercises and work with Connecticut's Department of Emergency Services and Public Protection (DESPP) in a range of exercises and actual emergencies, often including hurricanes and ice storms. The utilities emphasized their interest in participating in future exercises postulating a cyber attack as the core exercise premise.

Some of the utilities underscored the need to know what state emergency officials and the Governor would want from them in the event of a cyber incident compromising delivery of essential utility services. Knowing that the demands will be different from normal emergency management, the utilities expressed the need to have a better sense of what the Governor will want them to do. Specific concerns are that communications must begin immediately, before all facts are known. Rumor control and command of information would be critical.

In a normal storm, one of the principal requests from Governors is prediction of recovery time, which will not necessarily be possible in a cyber attack. A cyber event may involve new malware requiring assessment, or malware implanted in unanticipated places, requiring discovery, containment and control. A cyber attack is likely to involve more than one state, more than one utility and result in prolonged service disruption. Rehearsed, previously cleared communication templates will also be necessary to address both disinformation and misinformation. The utilities expressed readiness to participate in emergency exercise scenarios in order to comply with the expectations of DESPP and the Governor in the event of a critical infrastructure cyber attack.

The common priority of Connecticut utilities' response plans is to seek resumption of operations. There has not been extensive planning to endure outage greater than 10 days or two weeks. Should utilities not be able to resume delivering electricity, natural gas or water after normal and reserve fuel supplies are depleted, they would look to state

emergency managers and the National Guard to help manage the consequences of critical infrastructure shut down.

Relationship Between IT and OT Systems

A continuing, basic challenge in sustaining sound utility cyber hygiene is shielding operational technology from any form of communication other than the company's disciplined, operational command and control. Connecticut utilities manage separation of IT and OT communications both by use of firewalls to prevent unwanted intrusion, sharing or overlap and by human attention and inspection.

IT and OT communications sometimes need to operate in the same domain in field operations. Connecticut utilities pay special attention to managing their distinct separation in field assets and other field work. This is an area of growing concern as more operational devices and functions use and depend on IT-based systems.

Program Assessment

This being the third year of annual critical infrastructure cybersecurity reviews conducted within the negotiated purview of the 2016 Public Utilities Regulatory Authority Cybersecurity Action Plan, each utility was asked to assess the program's value and to offer suggestions or changes that might improve the process and resulting annual reports. The core tenets of that agreed procedure are that reviews will be annual and confidential, with Connecticut State participation restricted to four representatives and unlimited company attendance. Participating companies are free to choose their own evaluation standards. Although confidential, there will be an ensuing report to the Governor, General Assembly and Office of Consumer Counsel, with the utilities having the right to read and strike any language prior to report release.

Regarding benefits, utilities cited the fact that state authorities, both the executive and legislative branches, learn and consequently gain a degree of comfort about utility cybersecurity resiliency work. Both that knowledge and reduced anxiety resulting from collaboration are valuable in promoting understanding as to the seriousness of cyber threats and the extensive work underway to contain them. The reviews also lay a foundation of current understanding that can be amended if a utility were to identify a new problem or find something that required updating.

There is general comfort with the specific points negotiated in 2016 regarding management of the reviews:

- Annual reviews are the preferred frequency;
- Regarding participation, utilities continue to prefer to bring as few or as many people to the meetings as they deem appropriate. Having four state participants is

roughly the right number, but the utilities are open to a slightly larger number if additional participants would bring new perspectives or fill gaps;

- The meetings should continue to be confidential so that conversations can be candid and constructive;
- The utilities like being able to select their own review standard. There was questioning as to whether C2M2 would continue to be the best vehicle in the future or whether it should be replaced or complemented;
- A final report should be submitted to the Governor, General Assembly and Office of Consumer Counsel; and
- Each participating company needs to have the right to read the report in draft and edit or take out language it finds unacceptable before the report is final.

Conclusions

The array and sophistication of cybersecurity threats facing Connecticut's public utilities is greater than it has been and continues to become more dangerous. The utilities are well aware of the increasing dangers, take them seriously and demonstrate top-level commitment to construct and manage defense. They are increasing cybersecurity culture generally, strengthening their in-house expertise and complementing what they have by retaining the services of external personnel and services. They know of no compromises to Connecticut's critical infrastructure operating systems and deserve credit for concerted efforts to see that none occur.

Connecticut's critical infrastructure cybersecurity work addresses the threats the utilities are aware of, with increasing assistance from other companies, trade associations and proactive assistance from the Department of Homeland Security, Department of Energy and Federal Bureau of Investigation. Connecticut utilities recognize that reports and public comments by senior U.S. Intelligence Community officials state that nation states and perhaps other actors have executed implants into the administrative areas of U.S. energy generators, transmitters and distributors.

The gap between the implantation that the Intelligence Community says is taking place and the ability of utilities to take counter measures must receive priority attention. The discrepancy demands federal attention. If American public utilities are as compromised as Intelligence Community officials assert, and if those utilities, despite arduous, serious, good-faith efforts to detect and eliminate threats do not find evidence of penetration, they need and deserve U.S. Government timely and detailed information sharing. The answers may include more extensive, high-level security clearances, more complete information sharing and increased candor regarding what the threats are and where they are coming from.

Given this setting of increasing threats and constantly threatened defense, utilities must prepare for the consequences of a breach. With potentially unprecedented and damaging consequences of prolonged absence of critical services, the utilities need to participate in

statewide and regional exercises postulated on such absence. They, along with federal, state and local authorities, would face the need for executive decisions, communications demands and crisis alleviation never before encountered. The utilities recognize their obligation to participate in such exercises and rehearsals before an actual compromise occurs.

PUBLIC NOTIFICATION
Important Information About Your Drinking Water

MANGANESE ACTION LEVEL EXCEEDANCE

Este informe contiene información importante acerca de su agua potable. Haga que alguien lo traduzca para usted, o hable con alguien que lo entienda.

Date: _____
PWS ID: _____
To: The Customers/Residents of
From: _____

In recent water tests, our public water system found Manganese at _____mg/l in water samples collected at the following locations:_____. Although this is not an emergency, as our customers, you have a right to know what happened and what we did or are doing to correct this situation. This level exceeds the EPA Health Advisory Level of 0.3 mg/l.

What should I do?

Manganese levels in excess of the EPA Health Advisory Level of 0.3 mg/l can be of special concern to infants and pregnant woman. Children under the age of 1 year should not be given this water to drink or have baby formula prepared with this water. It is advisable that pregnant woman also avoid drinking this water until treatment is in place to reduce the levels of manganese. Please see attached DPH fact sheet on manganese for more information.

What is being done?

The following area(s) have been affected:

_____

_____

The following steps are being taken:

_____

_____

If you have any questions please contact _____ at _____ or
(owner, operator or designee) (phone #)
by mail at _____, _____, _____, _____
(Street) (Town) (State) (Zip Code)

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

Safe Drinking Water Primacy Assessment
Annual Report to the General Assembly
Public Act 19-117, Section 75

Commissioner Renée D. Coleman-Mitchell, MPH

November 2019

State of Connecticut
Department of Public Health
410 Capitol Avenue
P.O. Box 340308
Hartford, CT

BACKGROUND

The Department of Public Health's (DPH) Drinking Water Section (DWS) is responsible for ensuring the adequacy and purity of Connecticut's public drinking water on a statewide basis through the administration and enforcement of a number of federal laws, including the Safe Drinking Water Act (SDWA), and state statutes. The DWS oversees and regulates approximately 2,450 public water systems, which use or rely upon approximately 4,400 high quality public drinking water sources and serve over 2.9 million residents in Connecticut. As part of its responsibility to assure safe drinking water to consumers, the DWS inspects at least 600 public water systems and processes over 500,000 drinking water quality test results annually; oversees and regulates certified operators; reviews and approves engineering plans for water treatment plants, storage tanks and other public water system infrastructure; provides technical assistance to public water systems and the communities they serve; administers the Drinking Water State Revolving Fund (DWSRF); enforces drinking water quality standards; oversees statewide water supply planning; and protects sources of public drinking water. The DWS accomplishes these goals through the dedicated work of an experienced staff comprised of sanitary engineers, environmental analysts and health program personnel.

The DWS provides the critical link between the federal and state standards and requirements and the public water systems, which are ultimately responsible for maintaining the high level of public health protection established under the SDWA. As additional and more complex drinking water standards are promulgated, individualized training for public water systems, technical assistance to water system operators and compliance assurance activities are undertaken. The department's ability to meet the complex and critical challenges and requirements associated with administering the state's drinking water program to ensure public health protection requires sufficient resources.

In 2012, budgetary forecasts indicated that the DWS would experience a steady decline in available federal funding in the coming fiscal years. The need for replacement funding to maintain existing staffing levels beginning in state fiscal year (FY) 2018 was subsequently identified. In 2016, the DPH was required by the Legislature, pursuant to PA 16-2 (May Spec. Sess.), to prepare and publish a report concerning the expenditures necessary to ensure the continued administration of safe drinking water standards for public drinking water (Report on Fees). In the following year, the Legislature adjusted the DPH's appropriation to address projected DWS funding shortfalls and authorized the assessment of community and non-transient non-community public water systems, in an amount not to exceed $2.5 million[1], to support the department's ability to maintain primacy

[1] The actual amount assessed was $2.025 million. The DPH has collected 98.3% of this amount and continues to follow up with delinquent public water systems. The DWS will recommend additional collection efforts, undertaken by the Department of Administrative Services, for systems that do not pay after three documented attempts.

under the SDWA. This assessment authority was limited to FY 2019. The Legislature also required the DPH, in consultation with the Secretary of OPM and representatives of water companies, to develop a methodology for a safe drinking water primacy assessment upon community, transient, and non-transient non-community public water systems. In accordance with Section 677 of PA 17-2, the DPH consulted with OPM and the water industry to draft proposed legislation that, after modification, was included within PA 19-117.

The department is required, pursuant to Section 75 of PA 19-117, to report on the resources, activities, and costs that support the DPH's ability to maintain primacy under the SDWA in the previous fiscal year, the number of full-time equivalent positions that performed required functions to maintain primacy in the previous fiscal year, and quality improvement strategies the department has deployed to streamline operations to make efficient and effective use of staff and resources.

REPORTING REQUIREMENTS

Primacy is the responsibility to implement and enforce the SDWA. Core functions of the primacy program include:

- Operating an enforcement program to ensure the public water systems comply with all safe drinking water requirements;
- Maintaining an inventory of public water systems throughout the state;
- Compiling a database to contain compliance information on public water systems;
- Conducting sanitary surveys of public water systems;
- Reviewing and approving public water system plans and specifications;
- Providing technical assistance to managers and operators of public water systems;
- Enforcing public notification, ensuring that public water systems regularly inform their consumers about the quality of the water that they are providing;
- Certifying laboratories that test drinking water samples;
- Administering Connecticut's Drinking Water State Revolving Fund program, which provides low interest loans to public water systems for planning, design and construction projects;
- Administering an Operator Certification, Backflow Prevention and Cross-Connection Program;
- Public interaction with citizens, chief elected officials, school officials and local health directors, including addressing consumer complaints and water quality concerns;
- Education of all entities regarding new requirements; and
- Source water assessment and protection.

In FY 2019, the DPH employed 58.98 full-time staff to perform the required functions to maintain primacy. All staff directly or indirectly support critical core functions of Connecticut's drinking

water primacy program. The cost of maintaining primacy under the SDWA, reflecting state and federal funding, was $8,751,819.

The DWS implemented several quality improvement strategies that contributed to streamlined operations and the efficient and effective use of staff and resources in FY 2019. These include:

Utilized Federal Technical Assistance Provider - The DWS Capacity Development Unit partnered with the Environmental Finance Center Network (EFCN) to present a series of three webinars aimed at developing technical, managerial and financial capacity for small community water systems. The webinar series was designed to prepare small public water systems in meeting new requirements set forth within PA 18-168. Topics covered include asset management, rate structures and rate setting, DWSRF funding program, unaccounted for water loss, hydropneumatic storage tank assessment, and regionalization/partnerships. Use of the federal technical assistance contractor enabled the DWS to utilize EFCN's expertise, at no cost to the state, to provide a series of trainings that directly relate to current initiatives. The webinars are available on both the EFCN and DPH websites.

Developed New Tracking Module - The DWS developed a module in its Compliance Assistance Database to input, respond and track all incidents and violations that are of immediate public health concern and required to be reported to the DPH. The final module has helped to eliminate inconsistencies in collecting relevant information, streamlined internal processes by linking databases, improved response times to minimize public exposure to a health risk, enhanced communications with stakeholders, and increased efficiency in tracking and resolving incidents.

Revised Public Water System Screening Form Process - The DWS has developed a revised public water system screening form process. The new process requires the form to be submitted when a potential development may result in the creation of a new public water system. The form captures information about conversions or expansions of existing (non-public) water systems and allows for review of current public water system classification and systems that are currently operating, but not being regulated. In order to ensure the accuracy of the information being submitted, the DWS verifies the data with local officials and property owners. A series of meetings were held with stakeholders to solicit feedback and the DWS subsequently developed a set of revisions to the form, which include local health director sign-off prior to submission to DPH. The revised form is currently awaiting approval; when approved it is expected to reduce the amount of time that it takes DWS staff to conduct their review and make a determination.

Streamlined After Hours Team Coverage Process - The DWS streamlined its 24/7 coverage process and trained staff in coverage responsibilities and procedures. The After Hours Team interacts with the DWS Section Chief, DPH Duty Officer, local health departments, the Office of

Early Childhood, public water systems, certified operators, the DPH Food Protection Program, and the DPH Facility Licensing and Investigations Section. Further, the After Hours coverage team has upgraded its ability to communicate remotely through improved information technology. The ability to access all DWS data, files and databases, including the Incident Response module in the Compliance Assistance Database, improves communication and promotes efficiency.

Revised Incident Report Form - The DWS revised the form it uses internally to document and notify necessary stakeholders during a public drinking water incident. A module in the Compliance Assistance Database was developed to input, respond to and track all incidents and violations that are of immediate public health concern and required to be reported to DPH. The module has helped eliminate inconsistencies in the collection of relevant information, streamlined internal processes by linking databases, improved response time to minimize public exposure to a health risk, enhanced communications with stakeholders, and increased efficiency in tracking and resolving incidents.

Data Portal Development - The DWS has begun developing an online data entry portal for public water systems to report their surface water and groundwater capacities. Currently, the capacities are reported in a digital file and the data is then manually entered into a database. The number of forms being submitted is significant enough to warrant the development of the data portal. In conjunction with the National Integrated Drought Information System (associated with NOAA), a North East Region data portal is also being developed. Its use will allow public water systems to electronically monitor their surface water capacities to determine possible drought conditions and adjust drought response triggers and actions.

Implemented SWIFT Software - The DWS has worked with Global Environmental Consulting, Inc. to implement SWIFT software, which allows sanitary surveys to be completed electronically. Field staff utilize the software on a tablet while conducting the sanitary survey to ensure all aspects of the required survey elements are addressed. This technology has allowed the DWS to improve turnaround time with respect to producing a final report and sharing violations quickly and efficiently.

Implementation of Sanitary Survey LEAN Event - The DPH reduced the average time from the date of a sanitary survey to the date of the issuance of the survey report by approximately 70%. The DWS conducted a LEAN event to identify and streamline the sanitary survey process. This, along with staff utilizing SWIFT software to conduct electronic sanitary surveys, as well as a new streamlined integrated question set to improve the time involved with identification and correction of unsanitary system conditions, has led to significant process improvement. With this survey process and technology, DWS engineers identify and address unsanitary conditions and public

health code violations quicker and more effectively, therefore reducing the potential of water system contamination and protecting consumers.

Streamlined Drinking Water Supply Planning and Completed Water Utility Coordinating Committee (WUCC) Statewide Plans - The DWS and stakeholders from public water utilities, local health departments, environmental groups, local governments and other state agencies worked together with Milone & MacBroom, Inc. to prepare three regional WUCC plans and one combined statewide plan. This effort has and will continue to streamline drinking water supply planning in Connecticut. The DWS intends to begin implementation of the reported recommendations during FY 2020.

Streamlined Enforcement Process for Lead and E-Coli - The DWS has removed unnecessary steps in the enforcement process for lead and e-coli violations. Public water systems that receive a violation for either lead or e-coli will also receive an order that ensures accountability and a pathway towards compliance.

Streamlined Process for Water Supply Plan Review - The DWS has developed a streamlined process for reviewing water supply plans to ensure they are reviewed quickly and thoroughly. The DWS intends to develop a team that will be trained on the new process and begin such reviews during FY 2020.

AWOP Implementation - Continued participation in the EPA sponsored Area Wide Optimization Program (AWOP) helps build DWS staff technical expertise, in order to better assist large community water systems with regulatory compliance issues. This year, AWOP training focused on disinfection by-products and data integrity concepts that have been used during all subpart H sanitary surveys.

Consumer Complaint Application Development - The DWS developed a streamlined process by which consumer complaints are handled, which included the creation and implementation of a Consumer Complaint Application within our Compliance Assistance Database. This application allows staff to efficiently create, modify and track consumer complaints.

Freedom of Information Act (FOIA) Request Tracking - The DWS has developed a standardized FOIA tracking process within the Compliance Assistance Database. The application allows for each request to be logged and tracked to ensure timely reviews and responses in accordance with FOIA laws.

well water may be as big a threat to homes as crumbling foundations

By SAUD ANWAR

SPECIAL TO HARTFORD COURANT | AUG 11, 2019 | 6:00 AM

Department of Transportation drivers around the state including drivers at District 1 Maintenance Garage in Glastonbury prepare their trucks for an approaching snowstorm. All 13 trucks at the Glastonbury garage were fully loaded with salt and liquid magnesium to help the salt work in low temperatures. A state senator is concerned that runoff from winter road treatment might be affecting residential water wells.

In recent years, the overwhelming toll of the continuing crumbling concrete foundation epidemic has become evident. Individual homeowners have each lost hundreds of thousands of dollars, not to mention the simple peace of mind of living in their homes.

In my role as a South Windsor town councilor, mayor and now state senator, I have visited many homes in our region impacted by this disaster. That is how I learned of another potentially disastrous problem that may impact public health, real estate and our way of life.

Recently, I traveled to a home in Ellington. A family there is facing a different challenge than a crumbling foundation, but one that may be just as serious and wide-reaching. They found that there is an overwhelming amount of sodium and chloride in their home well water.
This has both made their water all but unusable, whether for drinking or for daily use, and has caused significant, permanent damage in their home due to the materials corroding the pipe. High sodium and chloride content in water can harm health and home value alike. Often, homeowners need to replace pipes and faucets. It's an expensive but sometimes necessary solution.

This family is far from the only one facing this problem. Sodium and chloride degradation has been reported in additional homes in communities across Connecticut. We must act now before more homes are harmed and more families face difficult decisions.

Generally, it's believed that snow management processes cause this situation. Many towns use salt-based products to treat roads in winter, and variables include the amount used, the consistency, the timing and the frequency of the applications. Complications can arise if storm drains are near a home's well, and the integrity of storm drains can affect the levels of contamination.

Swimming pools and water softeners also have history of contaminating home wells. Depending on the location and depth of a well, cracks in a pool or breakdowns in a water softener system can lead to increased salt entering a well, which could eventually make a well unusable.

We owe it to ourselves and our neighbors to study this condition across the state and decide whether we need to put new policies in place to help fight the problem. **For instance, we could require biennial tests for sodium and chloride levels in wells. Studying the issue and creating a map of homes impacted by it could further help us understand ecological and geological patterns that could contribute to wells being compromised. Further, the General Assembly could develop policies to assess storm drain strength and to monitor chemicals and products used for snow removal**. It's possible that overuse, or misuse, of these products could be contributing to these problems. If so, we must act to prevent further issues.

If homes are found to have this problem, we would need to put steps in place to help families and homeowners. The first course of action must be to find and confirm sources of contamination, and to make sure families have access to safe water in their homes during any necessary work. We must also study timelines and potential solutions to this problem and find those that are most cost-effective.

If my concerns are accurate, and if this threatens as many homes as I fear, our first step in the General Assembly should be to develop a task force in cooperation with the Department of Energy and Environmental Protection and the Department of Transportation to better grasp the magnitude, causes, prevention and remediation of the problem. By involving municipal leaders and other stakeholders, we stand a chance of finding solutions as soon as possible. Hopefully, we can prevent and manage this silent problem before it expands to the level of crumbling foundations.

Saud Anwar, D-East Hartford, is the Connecticut Senate deputy president pro tempore.

PFAS ACTION PLAN

BY THE CONNECTICUT INTERAGENCY

PFAS TASK FORCE

NOVEMBER 1, 2019

Initiated by

GOVERNOR NED LAMONT

Led by the

DEPARTMENT of PUBLIC HEALTH &

DEPARTMENT of ENERGY AND ENVIRONMENTAL PROTECTION

EXECUTIVE SUMMARY

To protect the health of Connecticut residents and the environment from the harmful effects of a class of widely used chemicals called per- and polyfluoroalkyl substances (PFAS), Governor Ned Lamont established the Connecticut Interagency PFAS Task Force on July 8, 2019. He charged this Task Force with producing, by November 1, 2019, a PFAS Action Plan laying out a comprehensive State strategy to:

1) Minimize environmental exposure to PFAS for Connecticut residents,
2) Minimize future releases of PFAS to the environment, and
3) Identify, assess, and clean up historical releases of PFAS to the environment.

The PFAS Task Force is led by the Connecticut Department of Public Health (DPH) and Department of Energy and Environment (DEEP) and co-chaired by DPH Commissioner Renée Coleman-Mitchell and DEEP Commissioner Katie S. Dykes. As the cross-cutting nature of its charge necessitates collaboration across State government, the Task Force comprises representatives of nearly twenty State agencies and entities.

The Task Force held its initial meeting on July 30, 2019, where it established Human Health, Pollution Prevention, and Remediation Committees to address the three strategic focus areas identified by Governor Lamont and provide policy recommendations to the Task Force. These committees were open to all who wished to participate. Each committee convened two meetings, all of which were broadcast live and recorded. The primary focus of the meetings was to receive stakeholder input, discuss important issues, and prepare for the second and third Task Force meetings on August 28, 2019 and September 18, 2019. The deliberations that took place and the public comments that were provided during this series of meetings culminated in the development of recommended actions reflecting input from knowledgeable and invested stakeholders statewide.

To provide an additional opportunity for public participation, the Task Force published its draft PFAS Action Plan on October 1, 2019 and instituted a fifteen-day public comment period, during which more than 400 comments were received. After review and careful consideration of each comment, the draft Plan was revised, where appropriate, to reflect public input.

The recommended actions outlined in the PFAS Action Plan lay out a comprehensive strategy for protecting Connecticut's citizens from PFAS exposure and protecting the environment from the effects of PFAS pollution. Moving forward, implementation of these recommendations will require continued collaboration among all of the stakeholders brought together by the Connecticut Interagency PFAS Task Force.

SUMMARY OF KEY RECOMMENDED ACTIONS

To **minimize Connecticut residents' PFAS exposure**:

- **Test drinking water for PFAS.** Require PFAS testing of public drinking water, using a phased approach that prioritizes the sources of public drinking water that are most vulnerable to PFAS pollution or serve vulnerable populations. Identify and prioritize testing of private drinking water wells proximal to areas with suspected or confirmed PFAS contamination. Require testing of bottled water. Educate residents and local officials on the potential risks associated with drinking PFAS-contaminated water. Continue to evaluate existing drinking water protection laws to proactively protect drinking water sources, monitor new research, and modify health-based guidelines as warranted.
- **Assess food-related PFAS exposure pathways.** Identify, evaluate, and prioritize other potential sources of human exposure to PFAS, including fish and shellfish, agricultural products, and food service ware.
- **Minimize occupational exposure to PFAS.** Identify workplaces where PFAS are used or manufactured and help employers implement exposure control strategies.

To **minimize future releases of PFAS to the environment**:

- **Reduce or prevent future releases of PFAS-containing firefighting foam to the environment.** Support initiatives including the development and implementation of best management practices for handling aqueous film-forming foam (AFFF), legislation limiting the use of AFFF, an AFFF take-back program for State agencies and municipal fire departments, and the evaluation, selection, and procurement of PFAS-free alternatives.
- **Identify and address other significant sources of PFAS contamination.** Identify the operations, processes, and consumer products that may be sources of PFAS contamination. Establish standards and discharge limits for PFAS in air and water. Evaluate the levels of PFAS that reach wastewater treatment plants, biosolids, and compost. Support the procurement of PFAS-free consumer products by State agencies.

To **identify, assess, and clean up historical releases of PFAS to the environment**:

- **Identify areas of concern throughout the state.** Develop an interagency geographic information system (GIS) database that identifies the universe of potential sources of PFAS pollution and the populations that may be most vulnerable to exposure to such pollution. Determine ambient conditions of PFAS in the environment and identify impacted areas by developing and implementing a strategy for random and targeted environmental sampling.
- **Require testing of environmental media at sites where PFAS are likely to have been released.** Sample environmental media at airports, fire departments, and firefighting training areas where AFFF has been stored or used. Sample environmental media at and

around landfills using a tiered approach prioritizing landfills that pose a potential risk to human health.

- **Evaluate corrective measures.** Establish PFAS cleanup standards for soil, groundwater, surface water, and aquatic biota. Continue using existing statutory authority to compel environmental investigation and cleanup of PFAS releases.

To **enhance education, outreach, and communication on PFAS**:

- **Establish a public outreach team** to improve communication with affected communities and other stakeholders.
- **Collaborate with local emergency response personnel** to efficiently and effectively disseminate information to the public about incidents involving PFAS.
- **Support initiatives to enhance notification of PFAS releases** to potentially threatened stakeholders.
- **Continue State agency participation in regional and national workgroups and training opportunities** to maintain knowledge and capacity for addressing PFAS.

The following **potential legislative opportunities** have been identified to support these recommended actions:

- **Establish an AFFF take-back program**.
- **Reduce future releases of AFFF to the environment** through other measures such as a ban on firefighting training with AFFF.
- **Establish a Safe Drinking Water Advisory Council** to make recommendations regarding Maximum Contaminant Levels (MCLs) for emerging contaminants, including PFAS, in drinking water.
- **Require all water bottlers that sell bottled water in Connecticut to test their products for PFAS**.
- **Evaluate whether the State can require manufacturers to disclose PFAS content** in Safety Data Sheets and product labeling, and consider establishing an Extended Producer Responsibility (EPR) program for PFAS-containing products.

INTRODUCTION

PFAS (per- and polyfluoroalkyl substances), a class of more than 4,700 synthetic organic chemicals, have recently entered the national spotlight due to concern about the potential risk that they pose to human health and the environment. While public attention to PFAS is new, the chemicals themselves have been manufactured and used worldwide since the 1940s. The chemical structures of PFAS compounds vary widely but all contain at least one fully fluorinated carbon atom. Their strong carbon–fluorine bonds make PFAS highly stable, heat-resistant, and oil- and water-repellent. Due to these properties, PFAS are widely used in consumer products such as nonstick cookware, waterproof apparel, stain-resistant textiles and carpets, personal care products, cleaners, waxes, and food packaging materials. They also have numerous industrial applications—for instance, PFAS are used in metal finishing operations and as the primary ingredient in aqueous film-forming foam (AFFF), the class of firefighting foam used to extinguish high-hazard flammable liquid fires.

The unique chemical properties that have made PFAS desired chemicals in manufacturing also make them pervasive and persistent once released into the environment. PFAS easily migrate in the environment and cause contamination of soil, sediment, groundwater, and surface water. Since PFAS are not currently known to be broken down by natural processes, they could persist in the environment indefinitely, earning them the nickname “forever chemicals.” As such, humans and animals can be exposed to PFAS through exposure pathways such as drinking contaminated water and eating contaminated fish and plants. Environmental exposure augments the human exposure that potentially results from the use of PFAS-containing consumer products and consumption of food packaged in PFAS-containing materials.

Our scientific understanding of these chemicals and their potential impact on humans and the environment is rapidly expanding. The existing body of scientific literature on PFAS, which has so far focused on a limited number of PFAS compounds, shows that these compounds bioaccumulate in humans and animals and links them to human health effects ranging from developmental effects in fetuses and infants to certain forms of cancer. For these compounds with substantiated health risks, environmental concentrations of concern currently reach as low as the parts per trillion (ppt), or nanograms per liter (ng/L), range. At present, limited toxicity data is available for the remainder of the more than 4,700 PFAS compounds, so further study is necessary to understand their potential health effects. Throughout this document, PFAS are discussed as a class. In the future, however, Connecticut agencies and the workgroups that arise out of this Task Force may consider evaluating these compounds individually.

In the past few years, the United States Environmental Protection Agency (EPA) has begun to assess PFAS, primarily in drinking water. Between 2013 and 2015, large public water systems serving more than 10,000 individuals were required to test their finished drinking water for six specific PFAS chemicals, among other pollutants, under the Third Unregulated Contaminant Monitoring Rule (UCMR3) carried out pursuant to the Safe Drinking Water Act (SDWA). In Connecticut, 42 large public water systems were tested for the six PFAS, and none reported any PFAS detections above EPA’s reporting limit at that time. Nationwide, between 2013 and 2015

under the UCMR3, 1.3 percent of large public water systems reported detections of at least one PFAS compound that exceeded the reference concentration of 70 ppt (70 ng/L). These systems are estimated to provide drinking water to approximately 5.5 million people.

In May 2016, soon after the conclusion of the UCMR3 sampling, EPA issued a Lifetime Health Advisory (LHA) for levels of two specific PFAS chemicals in drinking water—perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS)—of 70 ppt, either individually or combined. This LHA was announced to the Connecticut public water systems in June 2016 by the Connecticut Department of Public Health (DPH). The announcement of EPA's LHA, along with high-profile news reporting on PFAS contamination sites such as those in Parkersburg, WV, Minneapolis-St. Paul, MN, Portsmouth, NH, and Hoosick Falls, NY, caused many states to evaluate the PFAS levels detected in their public water systems and consider how best to address the possibility of contamination of public and private drinking water supplies. Similarly, many individual states' environmental protection agencies began to assess what could be done to address sources of PFAS pollution. In December 2016, DPH issued an Action Level (AL) of 70 ppt for the combined levels of PFOA, PFOS, and three additional PFAS chemicals. This information was shared with the state's public water systems and local officials.

In May 2018, EPA hosted a National Leadership Summit on PFAS. Representatives from DPH and the Connecticut Department of Energy and Environmental Protection (DEEP) attended. As a follow-up to the many concerns raised by states and stakeholder groups, EPA held Regional Community Engagement events in communities impacted by PFAS in drinking water and committed to prepare an action plan to address PFAS nationwide. DPH and DEEP attended the session hosted by EPA Region 1 in New Hampshire, where DPH presented on their outreach efforts and the lessons learned during their response in the spring of 2018 to Connecticut's first instance of PFAS drinking water contamination, in which public and private wells in Greenwich, CT were threatened by groundwater pollution originating from Westchester County, New York, and one private well was found to be polluted with PFAS above the DPH AL.

In February 2019, EPA released its PFAS Action Plan. Key action items in the EPA plan include:

- Determination, by the end of 2019, on whether a Maximum Contaminant Level (MCL) for PFOA and PFOS in drinking water should be promulgated;
- Steps to list certain PFAS as "hazardous substances" under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA);
- Development of interim groundwater cleanup standards;
- Potential PFAS use reporting on the Toxics Release Inventory;
- Potential review of new PFAS under the Toxic Substances Control Act;
- Expansion of PFAS research; and
- Development of a PFAS Communication Toolbox.

While many of the proposed actions in the EPA Action Plan are meritorious, the timelines identified for implementation are considered too long by many states, including Connecticut.

Given the long timeframe for future federal regulations governing PFAS exposure, use, and disposal, state leadership in this regard is crucial. Accordingly, on July 8, 2019, Governor Ned Lamont established the Connecticut Interagency PFAS Task Force with the goal of educating residents about the potential risks associated with PFAS and implementing appropriate safeguards. He charged this Task Force with writing and delivering to him, by November 1, 2019, a PFAS Action Plan (Plan) containing a comprehensive state strategy to (1) minimize environmental exposure to PFAS for Connecticut residents, (2) minimize future releases of PFAS to the environment, and (3) identify, assess, and clean up historical releases of PFAS to the environment.

The PFAS Task Force was led by DPH and DEEP, whose initiatives in recent years have laid the groundwork for state action. It was chaired by DPH Commissioner Renée Coleman-Mitchell and DEEP Commissioner Katie S. Dykes. As the cross-cutting nature of its charge necessitates collaboration across state government, the Task Force contained representatives spanning nearly twenty State agencies and entities, including the Office of the Governor (OTG), Department of Emergency Services and Public Protection (DESPP), Connecticut Airport Authority (CAA), Office of the Attorney General (OAG), Office of Policy and Management (OPM), Department of Transportation (DOT), Public Utilities Regulatory Authority (PURA), Department of Consumer Protection (DCP), Connecticut Military Department (CTMD), Department of Correction (DOC), Department of Administrative Services (DAS), Connecticut State Colleges and Universities (CSCU), University of Connecticut (UCONN), Department of Agriculture (DOAG), Department of Developmental Services (DDS), and Connecticut Agricultural Experiment Station (CAES).

During its initial meeting on July 30, 2019, the Task Force established Human Health, Pollution Prevention, and Remediation Committees to ensure that the Plan would properly address the three strategic focus areas identified by Governor Lamont and would reflect input from stakeholders. These three committees each held two meetings, one in the run-up to the second Task Force meeting on August 28, 2019 and the other during the week prior to the third and final Task Force meeting on September 18, 2019.

Figure 1. Interagency PFAS Task Force meeting, Legislative Office Building, Hartford, September 18, 2019

RECOMMENDED PFAS INITIATIVES

As stated in the Introduction, three focus committees—Human Health, Pollution Prevention, and Remediation—were established by the Task Force to evaluate how Connecticut can protect human health and the environment from PFAS exposure. Recommended action items in these strategic focus areas are discussed in detail below and described with respect to short-term and intermediate priorities. Depending upon the availability of resources (staffing/funding), short-term actions may be initiated within 3-6 months and intermediate actions may be initiated within 6-12 months. Some activities are already underway and are considered ongoing actions.

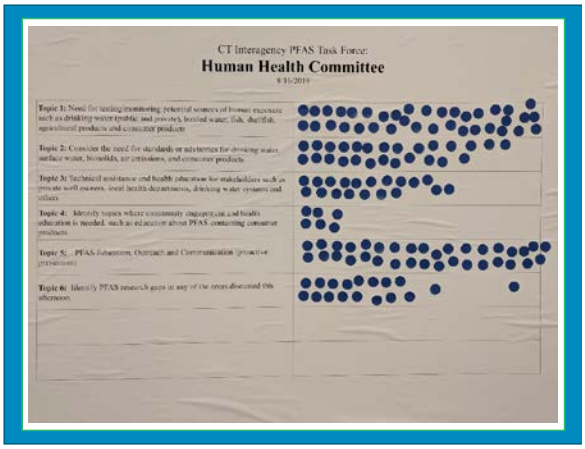
STRATEGIC FOCUS 1 - PROTECT THE HEALTH OF CONNECTICUT'S CITIZENS: MINIMIZING ENVIRONMENTAL EXPOSURE TO PFAS

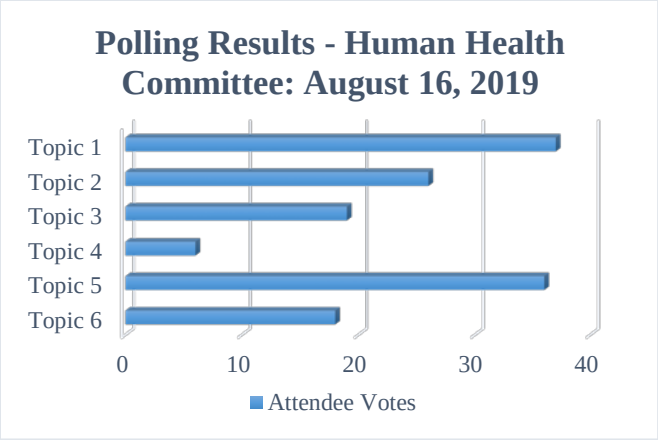
The first goal of the Interagency PFAS Task Force was to "minimize environmental exposure to PFAS for Connecticut residents." During the first meeting of the Interagency PFAS Task Force on July 30, 2019, the Task Force established the Human Health Committee to address human exposure to PFAS through various environmental media.

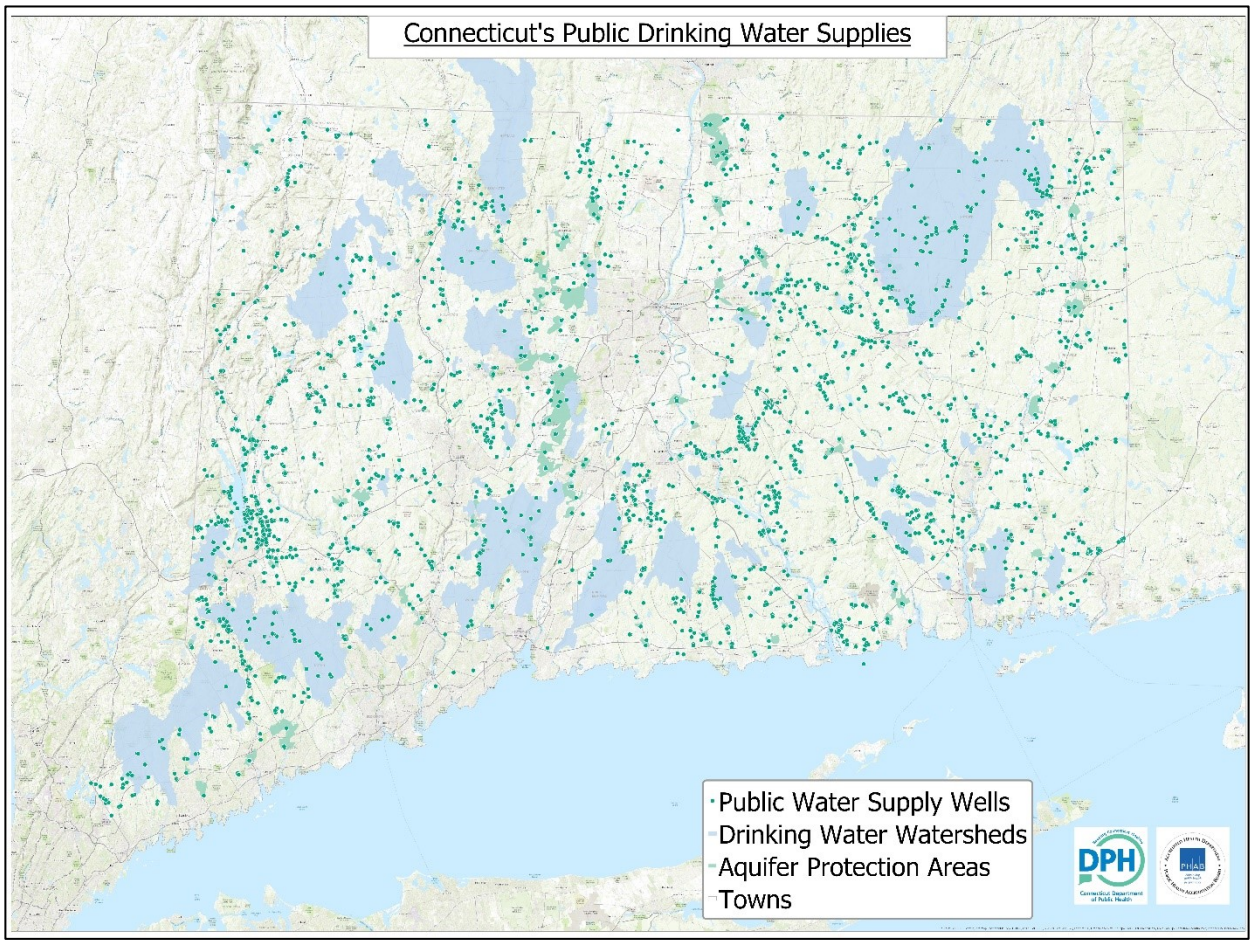
The Human Health Committee held its first meeting on August 16, 2019 and its second meeting on September 10, 2019. During the first meeting, six topics were proposed by the co-chairs of the committee, which were each discussed by the meeting participants in depth. These topics were:

1. The need for testing/monitoring of potential sources of human exposure such as drinking water (public and private), bottled water, fish, shellfish, agricultural products, and consumer products;
2. The need for standards or advisories for drinking water, surface water, biosolids, air emissions, and consumer products;
3. Technical assistance and health education for stakeholders such as private well owners, local health departments, drinking water systems, and others;
4. Identification of topics where community engagement and health education are needed, such as education about PFAS-containing consumer products;
5. PFAS education, outreach and communication (proactive prevention); and
6. Identification of PFAS research gaps in any of the areas discussed.

An informal poll was conducted at the close of the first meeting, which assisted the co-chairs in identifying the topics of greatest importance to the public. Testing drinking water was identified as a priority item because studies indicate that the PFAS compounds in Connecticut's AL can have a variety of health effects at various life stages from before birth to adulthood. As a result, the Human Health Committee recommended that the first action the State should take to minimize environmental exposure for Connecticut residents is to implement a phased PFAS testing program for public drinking water. In the second meeting, the co-chairs shared action items that were identified based on the comments and information offered in the first meeting and the input received during the second Task Force meeting on August 28, 2019. Committee meeting agendas, presentations, and meeting minutes are included in the Appendix to this Plan.







As a result of discussions at these meetings, the Human Health Committee identified several action items, listed below, to minimize Connecticut residents' exposure to PFAS, as well as agencies and organizations that have expertise and/or authority to assist in implementing these actions.

The Task Force recommends prioritization of the following action items:

Ongoing and Short-Term Actions

1) Test drinking water for PFAS
   a) Public drinking water – Require testing of public drinking water for select PFAS using EPA-validated laboratory methods for analysis. Utilize a phased approach to prioritize testing of public water systems with vulnerable sources as identified by land use assessments, those that serve vulnerable receptors such as schools and daycares, and those that serve disadvantaged communities. If PFAS are identified through this testing, work with water companies to mitigate human exposure. Collaborate with local officials on education and outreach to affected communities. Develop educational information specific to schools and daycares.
   b) Private wells – Identify and prioritize private wells that may need to be tested for PFAS by using analytical data obtained from the testing of public water systems and/or information about potential PFAS sites and sources. Develop a plan to inventory private well locations, working with stakeholders including the State Water Plan implementation group under the Water Planning Council. Support funding for State agencies to conduct private well sampling and analysis.
   c) Bottled water – Require that all water bottlers in the state that utilize sources approved by DPH pursuant to CGS 21a-150a(a)(2) test for select PFAS and make results available to DPH and the public. DPH and DCP plan to evaluate the feasibility of implementing a requirement for all water bottlers that sell bottled water in Connecticut to test for select PFAS and periodically provide results of PFAS testing on water products ready for consumption.
   d) Educate Connecticut residents and local officials on the potential risks associated with the ingestion of PFAS-impacted drinking water.
   e) Continue to monitor new research and modify health-based guidelines as warranted.
   f) Continue to evaluate existing drinking water protection laws and make recommendations as appropriate to protect public drinking water sources.
2) Establish a Safe Drinking Water Advisory Council to advise the Commissioner of DPH regarding the potential development of MCLs. Coordinate Safe Drinking Water Advisory Council duties and provide support in order for the Council to submit recommendations to the DPH Commissioner.
3) Support measures that provide financial assistance to public water systems for infrastructure improvements, including treatment and/or interconnections to nearby public water systems.
4) Procure laboratory instrumentation for PFAS analysis at the State Department of Public Health Laboratory.
5) Continue the laboratorian ad hoc group (including CAES, UCONN, and Yale University) to understand and evaluate laboratory capabilities for PFAS analysis.
6) Continue to provide technical assistance, education, and outreach to local health departments and other officials through publications and in-person and web-based training.

7) Provide technical assistance and health education for all other stakeholders, including risk communication messaging for consumption of water, fish, and other food products.
8) Maintain and strengthen partnerships with Yale University, UCONN, and other academic institutions to keep abreast of PFAS biomonitoring studies, biomonitoring needs, and biomonitoring data trends in the occupational community and general public.
9) Establish an academic roundtable that periodically meets to share research and enhance the knowledge of the impacts of PFAS on human health.
10) Continue involvement with ASDWA, EPA, and the Centers for Disease Control and Prevention (CDC), as well as interaction with regional state agencies.

Intermediate Actions

11) Identify, prioritize, and evaluate other potential sources of PFAS exposure to humans, including but not limited to fish, shellfish, dairy, other agricultural products, and food service ware.
12) Identify workplaces where PFAS are used as process chemicals and provide education and technical assistance materials detailing exposure control strategies to those employers.

STRATEGIC FOCUS 2 - POLLUTION PREVENTION: MINIMIZING FUTURE RELEASES OF PFAS TO THE ENVIRONMENT

The Pollution Prevention (P2) Committee was established by the Interagency PFAS Task Force to identify how future releases of PFAS to the environment can be reduced. The P2 Committee was co-chaired by representatives from DEEP and DESPP and held its first meeting on August 15, 2019. Robust discussion was held on AFFF regarding best management practices for storage and use, inventories of existing state and municipal stocks, and financial assistance for the establishment of a take-back program to safely dispose of AFFF and thereby prevent future releases. Additional topics of primary importance, as determined through polling, included education, outreach, and communication; PFAS levels in domestic and industrial wastewaters; permitting of PFAS in wastewaters; the universe of potential PFAS sources; and the irrigation of agricultural land with PFAS-contaminated water.

The second meeting of the P2 Committee occurred on September 11, 2019. At the meeting, DEEP gave a presentation on PFAS in food service ware, and the American Chemistry Council presented on PFAS in consumer products. The following topics were discussed and recommended for consideration in the Action Plan: biosolids, additional evaluation of consumer products that may contain PFAS, PFAS discharges to different environmental media, and steps that Agencies can take to reduce PFAS pollution.

The main pathways for continued releases of PFAS to the environment are discharges to air, soil, water, and municipal wastewater treatment facilities as a result of industrial and commercial processes, as well as the use of AFFF for both training and incident response. Of particular interest in Connecticut, given the state's industrial history, are metal finishers, certain types of textile mills, and other operations that utilize PFAS-containing materials.

AFFF is used to fight high-hazard Class B petroleum and flammable liquid fires. Examples of locations where this type of foam might be used include chemical plants, airports, bulk petroleum storage facilities, military facilities, and municipal firefighting response and training areas. All AFFF contains PFAS. Versions of AFFF manufactured prior to 2003 were known to contain primarily PFOS. Although the use of PFOS in AFFF was discontinued, legacy products are still in use, and replacement AFFF formulations still contain other PFAS that may be problematic and present an unacceptable risk to human health and the environment.

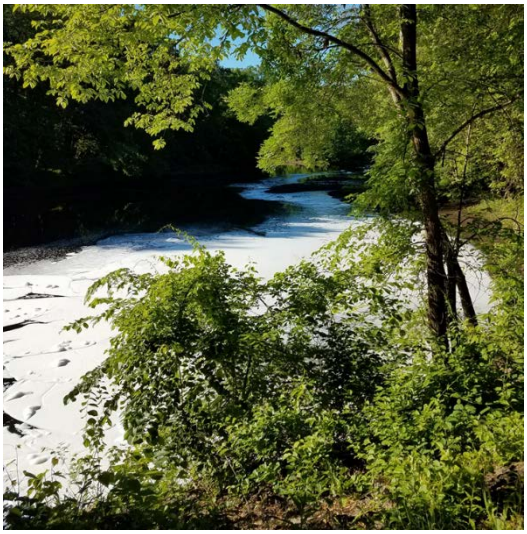


Figure 2. AFFF release to the Farmington River, Windsor, June 9, 2019.

Numerous consumer products can also contain PFAS, including but not limited to carpeting, treated fabrics, cleaners, and waxes. Manufacturing, use, and disposal of these products may release PFAS to the environment and lead to human exposure.

The Task Force recommends prioritization of the following action items:

Ongoing and Short-Term Actions

1) Determine the universe of potential PFAS sources by:
   a) Identifying the operations and processes that may be sources of PFAS contamination. These may include but are not limited to metal finishing facilities, car washes, land-applied biosolids, biosolids incineration, firefighting training facilities, landfills, waste-to-energy facilities, recycling facilities, and spills and incidents where AFFF is used.
   b) Identifying the consumer products that may contain PFAS. These may include but are not limited to food and product packaging, nonstick cookware, cleaners, waxes, and coated fabric and paper.
2) Support initiatives that minimize future releases of AFFF to the environment:
   a) Legislation and financial support to establish an AFFF take-back program for State agencies and municipal fire departments.
   b) Evaluation, selection, and procurement of fluorine-free alternative foams for Class B flammable liquid fires.
   c) Development and implementation of best management practices for the handling and storage of AFFF concentrate, management of released AFFF, and disposal of associated impacted media.
   d) Future legislation that would reduce future releases of AFFF to the environment, such as a ban on firefighting training with AFFF.
3) Enhance procurement of PFAS-free consumer products by State agencies, such as cleaning products, food service ware, and food packaging.
4) Continue involvement with workgroups including NEBRA, NEWMOA, and NEIWPCC, as well as interaction with regional state agencies.

Intermediate Actions

5) Establish standards and discharge/emission limits for PFAS in air and water.
6) Implement baseline sampling at wastewater treatment plants.
7) Evaluate biosolids' PFAS levels and ultimate use and/or disposal.
8) Evaluate PFAS levels in compost derived from food waste containing compostable food containers, disposable cutlery, and/or PFAS-treated paper products.
9) Convene an ad hoc group to review the most current research and nationwide actions regarding food packaging, consumer products, and the recycling thereof. Develop recommendations for reducing PFAS exposures, such as considering an Extended Producer Responsibility (EPR) program for effective management of waste from PFAS-containing products.
10) Educate Connecticut residents, businesses, and local officials on best management practices to reduce PFAS discharges to subsurface sewage disposal systems.

STRATEGIC FOCUS 3 - REMEDIATION: IDENTIFYING, ASSESSING, AND CLEANING UP HISTORICAL RELEASES OF PFAS TO THE ENVIRONMENT

The Remediation Committee was established by the Interagency PFAS Task Force to provide direction for the process of finding, assessing, and cleaning up past PFAS releases. This committee was co-chaired by representatives from DEEP and the LEP community.

The Remediation Committee held its first meeting on August 16, 2019 and its second meeting on September 12, 2019. During the first meeting, a number of topics were introduced by the committee co-chairs and discussed by the committee members in attendance, including the numerous PFAS sources potentially responsible for sites of historical PFAS pollution in Connecticut. At the close of the meeting, committee members voted on these topics. The topics considered most important included the universe of potential PFAS sites; the establishment of cleanup standards and applicability of Significant Environmental Hazard Notification; education, outreach, and communication; evaluation of background concentrations in the environment; and evaluation of cleanup options for contaminated environmental media.

During the second Remediation Committee meeting, a representative of the United States Geological Survey (USGS) presented to the committee on USGS PFAS initiatives at the national, regional, and local levels. Committee members revisited some topics to discuss them in greater detail, and the co-chairs shared the action items identified through prior committee and Task Force discussion.

Given the prevalence of PFAS in consumer products, AFFF, and industry, particularly in light of our state's rich industrial history, the probability is high that there have been releases to Connecticut's environment that should be investigated and remediated. Properties impacted by PFAS releases must be identified and assessed, with priority given to those in close proximity to sensitive receptors such as potable wells and ecologically important areas.

The Task Force recommends prioritization of the following action items:

<u>Ongoing and Short-Term Actions</u>

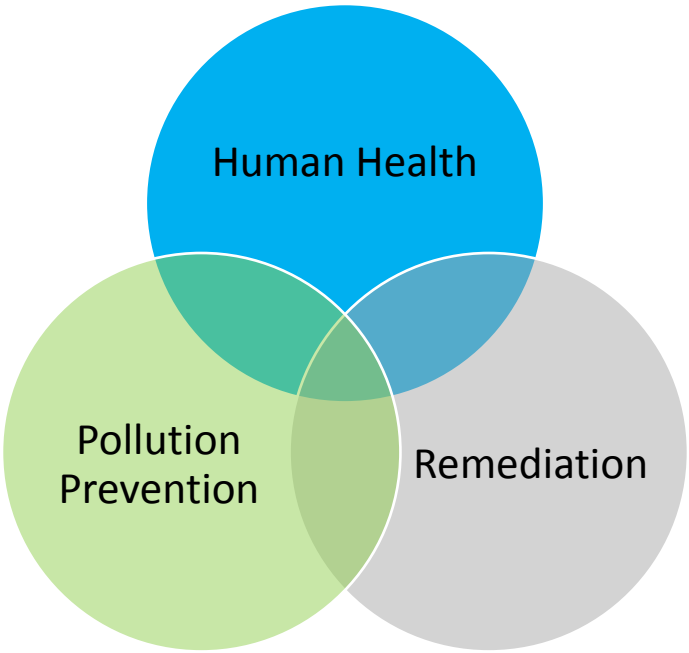
1) Develop an interagency geographic information system (GIS) database that identifies the universe of potential source sites and threatened receptors, including sensitive areas such as high-quality drinking water sources, Outstanding National Resource Waters, wild and scenic rivers, and habitats for endangered, threatened, and special concern species that may be vulnerable to PFAS.
2) Sample and analyze environmental media at airports where AFFF has been stored or released.
3) Sample and analyze environmental media at fire departments and firefighting training facilities where AFFF has been stored or released.
4) Continue the use of existing statutory authority to compel the investigation and cleanup of PFAS releases.

5) Support measures that provide financial assistance to municipal entities for environmental investigation and cleanup of publicly owned PFAS sites.
6) Collaborate with university researchers, environmental consultants, and others to keep abreast of emerging technologies for PFAS detection and cleanup and to evaluate the potential efficacy and applicability of such technologies in Connecticut.
7) Continue involvement with regional state agencies and groups including NEWMOA, EPA Region 1, ECOS, NEIWPCC, and the Interstate Technology and Regulatory Council (ITRC) to share information related to PFAS sites, fate and transport, and remediation.

Intermediate Actions

8) Develop and implement a strategy for random and targeted sampling of environmental media and aquatic organisms to determine ambient conditions and identify impacted areas. Consult with federal agencies and other parties conducting environmental sampling to share information on sample locations and analytical results.
9) Sample and analyze various environmental media at and surrounding landfills using a tiered approach, prioritizing landfills located near potential human receptors.
10) Establish PFAS cleanup standards for direct exposure to soil, soil leaching to groundwater, groundwater, surface water, and aquatic biota.
11) Establish an academic roundtable that periodically meets to share research and enhance knowledge of the impacts of PFAS on aquatic life and other wildlife.

STRATEGIC FOCUS 4 – EDUCATION, OUTREACH, AND COMMUNICATION



Throughout the Action Plan development process, one of the primary topics raised by stakeholders was the importance of effective communication by State agencies on PFAS-related topics. PFAS present a new and complex challenge to existing channels of education, outreach, and communication, and holistic enhancement of these channels is essential to ensure that all stakeholders have timely access to the PFAS-related information that they require. The stakeholders impacted by PFAS are many and diverse, ranging from private well owners and consumers of public drinking water to wastewater treatment facilities and water companies.

Numerous established laws and plans provide a consistent method for State agencies to disseminate information. The State Response Framework describes how the State of Connecticut and its partners will work together to support local governments and their residents in response to disasters and emergencies. CGS 22a-449 provides the framework for notification of chemical releases to the chief executive officer and local health director of a municipality where a release occurs. The Regulations of Connecticut State Agencies (RCSA) Section 19-13-B102(i)(10)(J) requires all community public drinking water systems to report annually to customers on contaminants found in the drinking water supply (Consumer Confidence Reports), and America's Water Infrastructure Act (AWIA) section 2018 amends the Emergency Planning and Community Right-to-Know Act (EPCRA) to include community public drinking water suppliers and primacy agencies. Moving forward, use of this existing framework at the local level will assist in facilitating timely and effective communication related to PFAS.

The following recommendations were developed to enhance how the State conducts public education, outreach, and communication. These actions can be scaled for different events and adapted for use in different situations.

Ongoing and Short-Term Actions

1. Establish a public outreach team consisting of DEEP and DPH personnel along with representatives of other State agencies as needed. On a case-by-case basis, this group may also include local officials and other stakeholders. This team would provide risk communication to the public in response to environmental incidents that pose a real or perceived threat to human health. Team members would provide a variety of risk communication services, such as communications templates, physical canvasing of affected areas, printing and circulation of informational newsletters, and/or hosting of public meetings.
2. Collaborate with local emergency response personnel and utilize existing communication plans to effectively disseminate information to the public.
3. Support technological and procedural initiatives to enhance notification of PFAS releases to potentially threatened receptors, including but not limited to water companies and wastewater treatment facilities. Monitor other states' activities for models of innovative and successful initiatives.
4. Continue State agency participation in regional and national workgroups, conferences, and training opportunities. These interactions provide the State agencies with knowledge of the challenges faced by states where PFAS contamination has been identified and the actions that states are taking to address these challenges.

POTENTIAL LEGISLATIVE OPPORTUNITIES TO SUPPORT RECOMMENDED ACTIONS

1. Establish an AFFF take-back program.
2. Reduce future releases of AFFF to the environment through other measures such as a ban on firefighting training with AFFF.
3. Establish a Safe Drinking Water Advisory Council - Legislation would create an advisory council for emerging contaminants, such as PFAS, to make recommendations regarding, *inter alia*, MCLs, notification levels, testing timeframes and frequencies with which testing should be required, and the form and content of public education materials to the Commissioner of Public Health regarding such contaminants. The Commissioner of Public Health would appoint the members of such an advisory council, which would include individuals with expertise in the appropriate fields, based upon a review of the Safe Drinking Water Councils of other states. The Council's process would be executed in a transparent fashion. Such members would serve without compensation.
4. Require all water bottlers that sell bottled water in Connecticut to test for PFAS in water products ready for consumption and to periodically provide the results of this testing.
5. Evaluate whether the State can require the disclosure of products containing PFAS in Safety Data Sheets and in product labeling, and consider establishing an EPR program for certain consumer products containing PFAS.