

BEFORE THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY PETITION FOR ADMINISTRATIVE RULEMAKING

- **To:** The Executive Secretariat, United States Environmental Protection Agency
- **Submitted By:** Stephen M. Kasprzak, Scientist and Engineer (Tufts University 1965 & 1967); Author of the Pan-Arctic Trilogy
- **Subject:** Petition to Establish Transboundary Hydro-Thermodynamic Accounting Standards for Short-Lived Climate Forcing Agents and Atmospheric Moisture Emissions from Canadian Hydroelectric Importation

I. INTRODUCTION AND STATEMENT OF PETITIONER'S INTEREST

Pursuant to Section 4(d) of the Administrative Procedure Act (APA), 5 U.S.C. § 553(e), and the Environmental Protection Agency's (EPA) implementing regulations, Petitioner Stephen M. Kasprzak formally petitions the EPA Administrator to initiate administrative rulemaking. The objective of this petition is to establish mandatory transboundary environmental accounting frameworks under the Clean Air Act's **Good Neighbor Provision (Section 110(a)(2)(D)(i)(I))** and international enforcement treaties.

As a primary researcher, author of the high-latitude climate trilogy (Blue Deserts, Arctic Blue Deserts, AWE: Arctic Water Emissions), and a citizen of the State of Maine, Petitioner has a direct material interest in protecting domestic air quality standards, correcting systemic data omissions within current High-Latitude Earth System Models, and halting the destruction of coastal ecosystems.

Petitioner resides on coastal tidal waters in Maine, directly exposing personal property, local municipal systems, and the region's expansive maritime economy to the catastrophic consequences of accelerated polar melting. The continuous alteration of high-latitude hydrodynamics by large dams and their flow regulation drives rapid calving of Greenland's glaciers, presenting an existential threat of rising sea levels to the **3,500 miles of Maine coastline**, including vulnerable town and city coastal infrastructure, working waterfronts, and fisheries networks.

Furthermore, this petition is submitted to arrest the human-induced degradation of

critical marine life. The Maine Atlantic salmon and the North Atlantic right whale are both strictly designated as endangered under the federal Endangered Species Act (ESA). Under federal law, the EPA is mandated to ensure its regulatory policies do not jeopardize their continued existence or accelerate the starvation of these federally protected species.

By ending the artificial winter heat flux from Canadian Arctic mega power stations (AMPSSs), we would allow natural ice to reform. This restores the Arctic's reflective ice shield and effectively "caps" the massive winter Arctic water emissions (AWE), immediately cooling the regional atmosphere, halting the forced humidification of the Northern Hemisphere, and slowing down the catastrophic melting and calving of Greenland's glaciers. Crucially, eliminating this continuous, unseasonable winter freshwater dilution will help to strengthen and stabilize the Atlantic Meridional Overturning Circulation (AMOC), the vital global ocean conveyor belt whose documented weakening has deeply alarmed the international scientific community. Neutralizing this man-made winter vapor engine will simultaneously enable the downwind winter snowpack to immediately recover its historic depth and density, restoring the boreal forest floor's essential spring thermal shield and systematically suppressing the premature desiccation that drives Canada's catastrophic spring and summer wildfire smoke cycles.

Concurrently, eliminating this unnatural winter discharge enables the complete restoration of the spring freshet's natural volume and timing. Re-establishing this massive seasonal freshwater wave restarts the ocean's vital haline upwelling pump mechanism. This biological restoration of the spring runoff and its upwelling currents eliminates the structural starvation of federally endangered species, rebuilding the dense copepod fields required to sustain the wild Atlantic salmon and the North Atlantic right whale, while simultaneously feeding the larvae to resurrect the depleted North Atlantic cod stocks. Forcing transboundary compliance thus achieves five monumental, interconnected global wins: stabilizing the Pan-Arctic climate, preventing the collapse of the global AMOC conveyor, halting the Greenland melt, extinguishing the cross-border wildfire engine, and reviving our shared coastal marine ecosystems from structural starvation.

The urgency of this federal intervention is underscored by the systemic institutional blockades encountered at the regional level. As documented in Petitioner's prior filings,

now preserved in the public record of Maine's Department of Environmental Protection (DEP), the U.S. Army Corps of Engineers (USACE) and the Maine DEP actively instructed staff to exclude the Gulf of Maine from environmental reviews. This petition incorporates seven foundational documents submitted by Petitioner during the 2019 NECEC public hearing process as formal, verified exhibits:

- EXHIBIT A: Petitioner's Testimony to the Maine Committee on Environment and Natural Resources regarding LD 640 (March 15, 2019), detailing a 50-year pattern of Canadian scientific censorship.
- EXHIBIT B: Petitioner's Fact Sheet: Hydro Dams Blamed for Decline in Fish Stocks (February 4, 2019).
- EXHIBIT C: Petitioner's Fact Sheet: Man-Made Storage of Water Resources - A Liability to the Ocean Environment (February 11, 2019).
- EXHIBIT D: Petitioner's Formal Request for an Environmental Impact Statement (EIS) to the U.S. Army Corps of Engineers (December 5, 2019).
- EXHIBIT E: Petitioner's CWA Section 404 Enforcement Brief to EPA Region 1 Wetlands Protection Unit (May 6, 2019).
- EXHIBIT F: Petitioner's Hydrographic Boundary Brief to USACE Colonel William M. Conde (December 19, 2019).
- EXHIBIT G: Petitioner's Executive Appeal to the White House (April 10, (2019)

II. EXECUTIVE SUMMARY OF ADMINISTRATIVE CLAIM

Current EPA regulatory matrices and the Intergovernmental Panel on Climate Change(IPCC) classify water vapor as a short-lived atmospheric feedback rather than an active anthropogenic climate forcing agent. This administrative framework relies on global atmospheric residence time averages (8 to 10 days) and assumes human water vapor emissions are climatically negligible.

This petition presents definitive empirical data refuting this parameterization in high-latitude zones. By completely omitting the continuous, 24/7 localized winter latent heat and moisture injections driven by Canadian AMPSs, specifically the Nelson River and La Grande River developments, current modeling suffers from a critical structural failure.

The seasonal inversion of subarctic river networks constitutes a massive, uncounted transboundary climate forcing engine. It lowers downwind winter snowpack resistance, drives premature terrestrial and coastal seas albedo collapse, and acts as the direct catalyst for the intense, smoke-producing boreal wildfire cycles that pollute United States airspace. Concurrently, as proven by Exhibits B, C, and E, it chokes the marine "spring nutrient pump," resulting in the trophic starvation of shared coastal fisheries.

III. LEGAL AUTHORITY AND JURISDICTION

The EPA possesses explicit statutory jurisdiction and an unyielding legal mandate to investigate and mitigate transboundary pollution under:

1. The Clean Air Act (CAA) § 115 (42 U.S.C. § 7415) - International Air Pollution: Mandates that whenever the Administrator has reason to believe that any air pollutant emitted in a foreign country may endanger the health or welfare of the United States, the Administrator must trigger formal mitigation protocols.
2. The Good Neighbor Provision (CAA § 110(a) (2) (D)(i)(I)): Prohibits upwind regional jurisdictions from emitting air pollutants that contribute significantly to nonattainment or interfere with the maintenance of National Ambient Air Quality Standards (NAAQS) in downwind states.
3. The Clean Water Act (CWA) Section 404(b)(1) Guidelines: Explicitly prohibits the issuance of a permit if the discharge of material or associated infrastructure alterations would cause or contribute to "significant degradation of the waters of the United States" (Exhibit E).
4. The Boundary Waters Treaty of 1909 (Article IV): Explicitly dictates that waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other.

IV. STATEMENT OF FACTUAL GROUNDS AND SCIENTIFIC EVIDENCE

A. Anthropogenic Thermal Pollution and Global Reservoir Scale

AMPS infrastructures operate as massive transboundary thermal sinks. They capture freezing spring freshets, sequester intensive summer solar radiation, and act as giant

"*thermal batteries*," storing water for prolonged periods as potential energy (Exhibit D). To maximize winter electricity generation, these facilities release colossal volumes of relatively warm, ice-free hypolimnial water drawn from deep within reservoirs, which arrives downstream approximately 9°F warmer in winter than natural, ice-locked river water.

On the La Grande River system, this structural manipulation has artificially inflated winter discharge from a natural baseline of 18,000 cubic feet per second (cfs) to a sustained winter torrent of 141,000 cfs (Exhibit D & F). As documented by Harper and compiled in Exhibit D, this represents an artificial winter increase of 123,000 cfs. This is the volumetric equivalent of injecting one and a half Niagara Falls of warm, unfrozen water into the shallow marine ecosystem of James Bay all winter long, while completely eliminating that same volume during the critical spring biological season.

This total destruction of high-latitude hydrological seasonality is explicitly verified by the multi-agency data matrices of the **Hudson Bay System Study (BaySys)** published in **Elementa: Science of the Anthropocene** and co-funded by Manitoba Electric, Hydro-Quebec et al. Utilizing decades of daily streamflow grids, BaySys modelers naturalized the subarctic hydrograph to isolate human impacts, confirming a permanent "*general flattening of the average annual hydrograph*" and a severe suppression of natural flow variations as the spring flood is sequestered behind reservoirs to unnaturally inflate winter discharge rates to meet southern electrical grid demands.

To put the global scale of this forcing in perspective, the 400 cubic kilometers of freshwater artificially sequestered behind these specific subarctic networks (Exhibits B, C, & E) represents 20 percent of the total combined water volume found in all the rivers in the entire world. Furthermore, as detailed in Exhibits A and E, the construction of these facilities resulted in the permanent flooding of over 10 million acres of land, including 1 million acres of critical wetlands, streams, and lakes, destroying the Canadian Boreal Forest, the "lungs of the land", and permanently erasing its carbon sequestration capacity.

The planetary scale capacity of this thermal pollution is empirically verified by the matching hydro-engineering baseline of the Russian Federation compiled in Exhibits D and F. Russia's construction of nine mega-dams across the Yenisei and Angara river

networks acts as an intentional "man-made Gulf Stream," releasing unfrozen water year round that prevents river ice formation for up to 300 kilometers downstream in the depths of the Siberian winter. Real-world monitoring by Roshydromet confirms that this cumulative northern heat flux has turned the shallow Kara Sea into a massive regional heat sink, forcing a 9°F (4.95°C) boost in regional air temperatures since 1998 and driving a 40% collapse in Arctic Ocean ice volume. As concluded in Exhibit D, the world can stop burning fossil fuels tomorrow, but that will not stop the continuing warming of the Arctic Ocean and adjacent northern seas by Canadian and Russian mega-reservoir thermal pollution.

B. The Downwind Cryospheric Cascade and Forest Desiccation

When this massive volume of warm freshwater is pumped under sub-zero marine ice all winter, it prevents solid freezing and creates expansive open-water flaw leads. This open water acts as a forced vapor engine, generating massive regional **"Domes of Moisture Emissions" (DOMEs)**. Traveling downwind across the Quebec-Labrador peninsula via prevailing winds, this elevated winter humidity lowers the physical resistance of the snowpack. Meteorological data from Kuujuaq, Kuujuarapik, and Inukjuak confirms a sudden, steep collapse in winter snowpack depth (Exhibit A & E; Kasprzak, 2026 Figs. 56-58), shifting the precipitation regime from dry snow to compact wet snow, freezing rain, and winter rain.

According to the laws of high-latitude thermodynamics governing the Surface Energy Budget ($R_n \approx H + LE + G$), this structural change in moisture composition triggers a severe albedo collapse from an initial dry snow reflection mirror ($a \approx 0.85-0.90$) down to a water-laden wet snow value of $a \approx 0.40-0.60$. By mapping this drop across the solar absorption formula ($1 - a$), the data demonstrates that the thinned, water-laden snowpack absorbs roughly three to six times more solar radiation than a natural dry snowpack, forcing an accelerated, premature melt-out early in April and May.

Net Radiation (R_n) tracks only the energy absorbed by the surface, calculated as $(1 - a)$. A baseline dry snowpack with an albedo of 0.85 to 0.90 absorbs a mere 10% to 15% of incoming radiation (0.10 to 0.15). An engineered wet snowpack with a collapsed albedo of 0.40 to 0.60 absorbs 40% to 60% of incoming radiation (0.40 to 0.60). Comparing the dry absorption maximum (0.15) to the wet absorption minimum (0.40) yields a 2.67 fold increase in heat retention, while comparing the dry minimum (0.10) to

the wet maximum (0.60) reveals a 6-fold increase, establishing a localized baseline absorption increase of roughly three to six times.

Once this thinner snow cover melts, the dark Sphagnum peat moss floor is prematurely exposed to the sun, dropping the albedo to a ≈ 0.15 and causing Net Radiation (R_n) to skyrocket. With the landscape rapidly running out of available moisture to sustain Latent Heat Flux (LE), this unchecked solar energy routes entirely into Sensible Heat Flux (H). The surface skin temperature of the bare, dark peat spikes rapidly, pumping powerful, hot, buoyant columns of air into the upper troposphere that force the development of dry convective storm cells and positive-polarity lightning, weaponizing the desiccated forest floor and driving cross-border smoke pollution into the United States.

C. Decades of Systematic Scientific Suppression and Data Omission

I believe the reason these profound hydro-thermodynamic realities have been omitted from current EPA and IPCC climate models is due to a documented, multi-decadal pattern of state-sponsored scientific censorship detailed in Exhibits A, E, and F. For over fifty years, the Canadian government and hydroelectric utilities have systematically muzzled high-latitude researchers whose empirical findings challenged the "clean energy" narrative of mega-dams.

As preserved in the historical news and judicial records under Exhibit A, senior scientific advisors like Douglas Hallett (1986) were forced to resign after being placed under strict government gag orders regarding hot-button environmental transformations. Crucially, as reported by Graeme Hamilton in 1991 (Exhibit A), federal Fisheries and Oceans officials explicitly blocked senior research scientist Dr. John Rudd and Carol Kelly from testifying before a New York environmental protection committee regarding their landmark five-year reservoir research. Dr. Rudd's field data definitively demonstrated that the decomposition of flooded peat in high-latitude reservoirs releases vast, continuous volumes of methane and carbon dioxide. By actively screening, and gagging these scientists to protect multi-billion-dollar energy export contracts, transboundary utilities successfully insulated their destructive thermodynamic models from peer review and regulatory scrutiny.

D. The Silent Starvation Driven by Oceanographic Nutrient Suppression

The transboundary modifications of high-latitude hydrographs by Canadian utilities actively violate EPA Clean Water Act Section 404(b)(1) guidelines, which strictly prohibit discharges or infrastructure activities that cause or contribute to the significant degradation of the waters of the United States (Exhibit E).

The precise physical fluid-dynamics mechanism driving this marine collapse was uncovered in a seminal 1964 field study by renowned Canadian oceanographer **Dr. Hans Neu (AOLReport 1970-9)**, compiled in Exhibit F. Neu's field data, collected at Pointe-des-Monts near the mouth of the St. Lawrence River before the massive reservoir flooding on the Manicouagan River, established a staggering mathematical correlation between freshwater river discharge and the deep-sea upwelling currents that feed the continental shelf and St. Lawrence River estuary. Specifically, Neu's field measurements showed that the physical upwelling ratio varies dynamically based on local depth constraints, ranging from a baseline 1-to-1 multiplier in shallow zones, increasing to 1-to-5, and accelerating up to a peak 1-to-15 ratio within the deepest portions of the channel. A spring reduction of 10,000 cubic meters per second in freshwater inflow decreased the upwelling of cold, nutrient-rich deep ocean water into the estuary **by 150,000 cubic meters per second. This is a 35 percent collapse of its natural volume, equivalent to 17 times the entire flow of the St. Lawrence River at Montreal.**

Because Neu concluded that river regulation would impose "*large-scale heat pollution with ecological implications*", it appears that the provincial authorities suppressed his 1964 study for nearly seven years, enforcing a strict gag order until December 1970, after the mega-scale Daniel Johnson Dam was safely online (Exhibits A & F).

In February 1977, Neu issued a warning that should have changed the course of North American energy policy. Writing in the Sherbrooke Record, he cautioned Hydro-Québec that the proliferation of massive reservoir hydroelectric facilities might be the true driver of declining fish stocks, and not overfishing. He saw what others ignored: that the "*soil*" of the ocean is the seasonal spring freshet, and by damming it, we were effectively starving the sea.

Historically, the great northern rivers functioned as a biological heartbeat. Every spring, a massive pulse of cold, silicate-rich freshwater poured into the Atlantic. This "haline pump" pulled deep-sea nutrients to the surface, triggering an explosion of diatoms - microscopic, glass-shelled algae. These diatoms are the literal fuel tank of the marine ecosystem: they are the essential first meal for newborn cod larvae and the primary food source for *Calanus finmarchicus*, the tiny, fat-rich copepods that right whales depend upon.

But the construction of AMPSSs fundamentally flatlined this heartbeat. To maximize power production during lucrative cold-weather peak demands, energy corporations turned these mega-reservoirs into Arctic Solar Storage Ponds. These massive impoundments function as giant thermal sinks, trapping over 90 percent of summer solar radiation deep within their water columns. (**Arctic Blue Deserts**)

By engineering a hydrological thermal inversion, these AMPSSs unleash this captured thermal energy to drive winter hydropower production. The consequence is an artificially inflated winter discharge of ice-free water that prevents downriver ice formation, sustaining expansive under-ice estuarine and coastal freshwater plumes. This industrial inversion of the Arctic water cycle has increased winter flows on rivers like the LaGrande ten-fold, while slashing the vital spring freshet by up to 70%.

The result is a cascading biological and climatic catastrophe that binds three of our most iconic, endangered species to a singular doom:

- **The Cod:** The nutrients they require in May are now discharged and wasted during the long sub-zero temperatures and darkness of winter. This is a time when plant life, like diatoms, is generally too metabolically dormant to effectively process CO₂ into carbon sugars and release oxygen. By spring, the silicate is gone. Without diatoms, the food chain shifts to low-fat dinoflagellates. The cod larvae are starved to death before they can grow.
- **The North Atlantic Right Whale:** Deprived of a diatom-rich diet, the copepod swarms that once blanketed the Gulf of Maine have plummeted. Starving whales are forced to abandon their traditional feeding ground and migrate into heavily trafficked, unregulated shipping corridors in search of food, leading to a devastating population decline.

- **The Maine Atlantic Salmon:** For millennia, wild salmon have relied on the heavy turbulent rush of the spring freshet as an evolutionary trigger. It is the chemical and physical clue that guides smolts out of rivers and into the ocean. By flatlining the freshet to save water for winter hydropower, AMPSSs have broken the migratory clock of a species already pushed to the absolute brink of extinction.

The damage doesn't stop at the shoreline. The massive volume of riverine heat flux and thermal inertia discharged from these Arctic solar storage ponds create manufactured open-water polynyas and flaw leads. This triggers additional Arctic Water Emissions (AWE), namely the sustained release of water vapor, a potent greenhouse gas, into the freezing dry air. This process drives forced atmospheric warming, accelerating the melt of Arctic sea ice and altering weather patterns across the Northern Hemisphere. (Arctic Blue Deserts) (Exhibits B,E and F)

V. PROPOSED RULEMAKING REQUESTS

To fulfill its statutory obligations under the Clean Air Act and restore scientific integrity to environmental accounting, the Petitioner requests the EPA execute the following administrative actions:

1. **Reclassify Regulated High-Latitude Moisture Emissions:** Formally amend regulatory guidance to recognize that continuous, 24/7 winter water vapor emissions from AMPSS infrastructures within the 10°C July Isotherm constitute a persistent anthropogenic climate forcing agent, rather than a feedback loop.
2. **Incorporate Transboundary Lifecycle Accounting for Imported Energy:** Issue a rule requiring all domestic utility commissions importing energy via transboundary transmission lines to incorporate lifecycle hydro-thermodynamic impact tracking. Utilities must count the millions of tons of unquantified carbon released via hydrograph-driven peat wildfires and the biological damages to coastal shelf species against the "clean energy" profiles of imported Canadian power.
3. **Convene an Immediate Interagency Task Force:** Partner with the International Joint Commission (IJC) and NOAA to execute a formal, top-down audit of under-ice freshwater plume dynamics, mapping how winter estuarine

vapor forcing directly causes downwind snowpack depletion and cross-border particulate transport.

4. **Fishery and Mammal Resurrection Protocols:** Establish an enforcement mechanism with transboundary regulators to restore the seasonal pulse of the spring freshet. Re-establishing the natural haline pump will deliver the silica necessary to jumpstart vital diatom blooms, simultaneously feeding the cod larvae and rebuilding the massive copepod fields required to sustain the endangered right whale and wild Atlantic salmon populations.

VI. CONCLUSION

The current top-down trace-gas climate models utilized by the EPA are mathematically incomplete because they systematically ignore the bottom-up thermodynamic forcing of continental river manipulation. As proven by the attached public records of Exhibits A through G, northeastern states are actively subsidizing a massive ecological tragedy under the illusion of climate righteousness. The data demands administrative correction.

Respectfully submitted,

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Appendix A: Master Bibliography and Support Literature

1. Core Framework and Historical Baselines

Kasprzak, S. M. (2020). **Blue Deserts**. Kennebunkport, ME: Tall Pine Publishing, Inc.

Kasprzak, S. M. (2021). **Arctic Blue Deserts: Flatlining the Arctic's Pulse**, Kennebunkport, ME: Tall Pine Publishing, Inc.

Kasprzak, S. M. (2026). **AWE: Arctic Water Emissions: Manufactured Winter AWE Is the Unrecognized Engineered Force Driving Rapid Arctic Warming**. Kennebunkport, ME Tall Pine Publishing, Inc. ISBN: 978-1-7372898-1-4

Neu, H. J. (1970). **AOL Report 1970-9: A Study on Mixing and Circulation in the St. Lawrence Estuary up to 1964**. (Suppressed 1964 Manuscript formally released December 1970).

Neu, H. J. (1975). ***Runoff Regulation for hydro-power and its effect on the ocean environment***. Hydrological Sciences Journal, 20(4), 435-444

Rozengurt, M. A., & Haydock, (1993). **Running on Empty: The Distortion of Coastal Ecosystems**.

2. Peer-Reviewed Verification Matrix

- Tefs, A. G., Stadnyk, T. A., Déry, S. J., et al. (2021-2024). **Simulating Hydroelectric Regulation and Climate Change in the Hudson Bay Drainage Basin**. Elementa: Science of the Anthropocene, Special Feature: The Hudson Bay System Study (BaySys).

Corroborates Section IV-A: This multi-year, utility co-funded study (Manitoba Hydro/ Hydro-Quebec) maps daily high latitude streamflow alterations. The simulations isolate human impacts and confirm a permanent “**general flattening of the average annual hydrographic and a suppression of natural variability**” across the Nelson and La Grande networks due to the unseasonable storage of spring water for winter power generation.

- Kirillov, S., Ehn, J. K., Babin, M., et al. (2020). **Quantifying the role of estuarine discharge in modulating landfast ice in Hudson Bay and James Bay**. Arctic Science, 6(3), 211-230.

Corroborates Section IV-A & B: Maps ice data at regulated river mouths, proving delayed autumn freeze-ups and earlier spring ice break-ups correspond directly with high winter discharge volumes.

- McClelland, J. W., et al. (2004). **Increasing river discharge in the Eurasian Arctic: Consideration of dams, permafrost thaw, and fires as potential agents of change**. Earth and Planetary Science Letters, 227(1-2), 93-104.

Corroborates Section IV-A: Verifies that high-latitude dam construction has forced macro-scale changes in the seasonality of Pan-Arctic river discharges across both North America and Eurasia.

- Woo, M. K., et al. (2007). **Streamflow hydrology in the boreal region under the influence of climate and human interference**. Sciences in Cold and Arid Regions, 1(1), 3-18.

Corroborates Section IV-A: Confirms that human flow regulation within the boreal forest biome alters winter/spring runoff trends far more acutely than natural climate variations.

- Brugger, S. O., et al. (2022). **High-latitude fire activity of recent decades derived from microscopic charcoal and black carbon in Greenland ice cores.** Front. Earth Sci., 10, 804910.

Corroborates Section /V-B: Tracks high-latitude ice cores, showing a distinct late-20th-century acceleration in charcoal accumulation matching post-AMPS Tipping Points.

- Thomas, J. L., et al. (2017). **Quantifying black carbon deposition over the Greenland ice sheet from forest fires in Canada.** Geophysical Research Letters, 44(15), 7965-7974.

Corroborates Section IV-B: Utilizes particle atmospheric tracing to prove that Canadian boreal forest fires act as the dominant source of black carbon events that melt the Greenland ice sheet.