

# REGIONAL WEATHER MODIFICATION LAWS

## MONTANA LAWS DO NOT MIRROR NEARBY STATES

A survey of the laws of Montana's neighboring states suggests these states have less-restrictive laws, allowing for various weather modification, or cloud-seeding, projects. The Water Policy Interim Committee requested this review at their January 2020 meeting. The review includes a look at the laws, rules, and programs in six states (Montana, Colorado, Idaho, North Dakota, Utah, and Wyoming). This review also looks at federal laws related to weather modification and at the major, privately funded, cloud-seeding project in Alberta.

Weather modification techniques were developed in the United States in the 1940s. The Montana Legislature passed its first weather modification laws in 1967.

The primary technical process that enables cloud seeding is the injection of silver iodide into a cloud under certain atmospheric conditions. Some research shows cloud seeding increases hydrological output in basins and reduces the size and severity of hailstorms. Others, however, claim that cloud seeding is akin to "cloud rustling," and decreases downwind precipitation.

Due to concerns primarily from eastern Montanans about cloud seeding in western North Dakota, the 1993 Montana Legislature passed laws that were more restrictive on weather modification, including increased environmental and public meeting requirements. Senate Bill 72 (1993) requires a permit applicant to provide an environmental impact statement, host a public meeting, and provide \$10 million proof of financial responsibility (in bonds, insurance, negotiable securities, cash, etc.) for unanticipated damages.

Since the passage of SB72, the Montana Department of Natural Resources has issued no weather modification permits. But in nearby states, the regulatory landscape is much different. Laws and policies in these states appear to encourage research and use of weather modification. Some state-supported projects cover large areas of these states. In others, weather modification projects are conducted by locally created districts or private companies. This review summarizes these differences.



State/entity	Authority	License/permit requirements	Exemptions and add'l authorities	Extent of program
Montana	<p><b>Atmospheric Weather Modification Act</b> (first passed in 1967), administered by <b>Department of Natural Resources and Conservation</b>. Weather modification defined "as changing or controlling or attempting to change or control, by artificial methods, the natural development of atmospheric cloud forms or precipitation forms that occur in the troposphere."</p>	<p>Annual <b>license</b> required for those with competence in field of weather modification. \$100 fee. Licensed applicant must receive <b>permit</b> for each operation annually in one geographic area. Permit requirements includes <b>fee</b> (1% of operation cost), \$10 million <b>proof of financial responsibility</b> to meet "the applicant's ability to respond in damages for liability that might reasonably be attached to or result from the applicant's weather modification and control activities," <b>environmental impact statement</b> (EIS) prepared by department, a <b>public meeting</b>, and publication of <b>notice of intention</b> to conduct weather modification operation.</p>	<p>Department may exempt research and experiments. County electors may petition for creation of county weather modification authority.</p>	<p>No permits issued since 1993.</p>
Alberta				<p>Multiple insurance companies formed the <b>Alberta Severe Weather Management Society</b> in 1996 to combat repeated, destructive hail within the province's "Hailstorm Alley." The society contracts with a private firm to conduct the aerial-based project, which is estimated to cost \$5 million annually.</p>

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Colorado	<p><b>Weather Modification Act of 1972</b> requires director of <b>Department of Natural Resources</b> to create rules. Director may delegate Colorado Water Conservation Board to administer act. Under the act, "the state of Colorado claims the right to all moisture suspended in the atmosphere which falls or is artificially induced to fall within its borders." Weather modification defined as "any program, operation, or experiment intended to induce changes in the composition, behavior, or dynamics of the atmosphere by artificial means."</p>	<p><b>Permit</b> required for each weather modification operation. Operators must meet qualifications, education, and experience requirements and provide required information. <b>Fees</b> include a permit fee (at least \$100); commercial operations pay an additional commercial fee (2% of yearly contact between permit holder and operation sponsors.) <b>Proof of financial responsibility</b> must be a liability policy of at least \$1 million or three times the value of the weather modification operation. Before the department issues a permit, a <b>public hearing</b> must be held. Applicants must publish a <b>legal notice</b> of intent in affected counties and notify the National Weather Service, Colorado Avalanche Information Center, county emergency managers, the Colorado State University's Colorado Climate Center. Permit holders must supply yearly operational plans, daily logs, annual reports, and records for aircraft-based operations. Permits may be suspended due to certain snowpack conditions, avalanche hazards, and weather hazards. Unpermitted weather modification activities without a permit are subject to a felony charge; failure to meet permitting requirements are subject to misdemeanor charge.</p>	<p>Department may exempt certain research, development, experiments, or emergency protection activities for fire, frost, hail, sleet, smog, fog, or drought.</p>	<p>The department has permitted <b>8 programs</b> across the state, including river basins, agricultural areas, and ski areas by ground-based generator and aircraft.</p>

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<b>Federal government (U.S.)</b>	Congress passed the <b>Weather Modification Reporting Act of 1972</b> and the <b>National Weather Modification Policy Act of 1976</b> requiring non-federally sponsored weather modification activities to report their doings to the <b>Commerce Department</b> .	None. This is a reporting requirement to the <b>National Oceanic and Atmospheric Administration</b> before, during, and after weather modification activities. The report must include the date of the activity, purpose, modification agents used, and method employed.		
<b>Idaho</b>	<b>Water Resources Division</b> director shall "develop, coordinate, and provide...for weather modification projects involving cloud seeding that are designed to increase the water supplies of the state by enhancing natural precipitation and which conform to state water planning objectives."	<b>No permitting requirements</b> , however, anyone conducting weather modification must file "a log of all its activities in the production, artificially, within the state, of rainfall" to state Department of Agriculture.	After a petition of real property holders, a county commission may hold elections to establish a weather modification district. The district may levy taxes to conduct weather modification activities. Water districts may authorize weather modification projects involving cloud seeding. And the state water resources board and private entities may fund their own projects.	Locally formed districts and private entities (like Idaho Power Co.) fund various projects across state.
<b>North Dakota</b>	State laws states "all water derived as a result of weather modification operations shall be considered a part of North Dakota's basic water supply..." <b>North Dakota Atmospheric Resource Board</b> administers weather modification program, including licenses, permits, standards, instructions, contracts, research and enforcement.	Annual, \$50 <b>license</b> required of competent applicants. Annual, \$25 <b>permit</b> required for each geographic area of operations. Applicant must provide an operational plan and furnish <b>proof of financial responsibility</b> of 5 times the value of an operation under contract or 5 times the cost of an operation not under contract. Performance or bid bonds may be required. Objection to permit may trigger a <b>public hearing</b> .	Weather modification authorities may be created (or abolished) by various petition methods, vote of the public, or a vote by a county commission. A county commission may use general fund levy taxes to pay for authority activities.	Board's major project is <b>North Dakota Cloud Modification Project</b> that seeds clouds for hail damage reduction and rain enhancement across all or parts of six western counties.

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Utah	The <b>1973 Cloud Seeding Act</b> states that "all water derived as a result of cloud seeding shall be considered a part of the natural water supply of the basin in the same sense as if no cloud seeding operations had been conducted..." The <b>Utah Division of Water Resources</b> administers much of the act; administrative rules allow for input and recommendations from the Utah Board of Water Resources and the Weather Modification Advisory Committee (if created).	Cloud-seeding contractors must <b>register</b> with the Division of Water Resources. The act required an applicant to meet established qualifications and submit <b>proof of financial responsibility</b> "to give reasonable assurance of protection to the public in the event it should be established that damages were caused to third parties as a result of negligence in carrying out a cloud-seeding project." (Amounts do not appear in law or rule.) Permit applicants must also submit contacts, operation plans, and file <b>notice of intention for publication</b> for each county where the operation is to be conducted.	Division of Water Resources must authorize cloud-seeding research, however fog suppression, frost prevention for orchards and crops are excluded from the act. The act also states that cloud-seeding is "not presumed to constitute trespass or nuisance."	The division funded more than \$500,000 across <b>7 projects</b> areas in basins across the state, which represents approximately 50 percent of the cost of the projects.

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<b>Wyoming</b>	State law says "the state of Wyoming claims its sovereign right to the use for its residents and best interests of the moisture contained in the cloud and atmosphere within its sovereign state boundaries."	The state engineer issues a separate <b>permit</b> for each "experiment or activity." An applicant must demonstrate adequate qualifications in atmospheric sciences and pay a <b>fee</b> of no more than \$100. A permittee must send a written report to the state engineer.	The state engineer may encourage and/or spend funds for weather modification activities.	The <b>Wyoming Water Development Office</b> manages two projects in the Wind River Mountains, and in the Medicine Bow, Sierra Madres, and Laramie mountain ranges. The ground-based Wind River project was appropriated \$460,000 in 2019, including funds from the state of Wyoming, Southern Nevada Water Authority, Central Arizona Water Conservancy District, Colorado River Board of California, and various Wyoming-based entities. The aerial-based project cost for the Medicin Bow/Sierra Madre/Laramie project was \$634,000 for the 2019-20 winter.

## Disclaimer

The summary was produced as part of the 2017-18 Water Policy Interim Committee's work plan for its House Joint Resolution 40 study. This summary of regional laws related to weather modification is neither exhaustive nor complete.

## References

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