

AGENDA

Meeting of the North Dakota Atmospheric Resource Board

1:30 p.m. CST, Tuesday, November 12, 2024

Bank of North Dakota, Lewis & Clark Room

1200 Memorial Highway, Bismarck, North Dakota

This meeting will also be held by Microsoft Teams. Connection information is on the following page.

1. Call to Order, Roll Call
2. **Approval of Minutes: April 24, 2024**
3. ARB Financial Updates (Kelli)
4. Review of the 2024 North Dakota Cloud Modification Project
 - a) Project overview (Darin)
 - b) Cost summary (Kelli)
 - c) Seeding agent usage/inventory (Mark)
 - d) Generator performance (Mark)
 - e) Intern programs (Kelli & Mark)
 - f) UND Weather Research and Forecasting (WRF) numerical modeling (Dan)
 - g) Aircraft operations (Darin)**
 - h) Contractor's final report / Approval of final contract payment (Darin)**
5. Mountrail County and Williams County ballot measures on weather modification (Darin)
6. ARB / NDCMP Public Survey and Listening Sessions (Abby)
7. ARB Research & Evaluation Program (Darin)
 - a) Hail Retrieval Algorithm (HRA) assessment
 - b) Weather Research and Forecasting (WRF) model enhancements through a Machine Learning Neural Network
8. Weather Radar Operations (Darin)
9. ARB Cooperative Observer Network (ARBCON) Report (Dan)
 - a) Growing season rainfall totals and grid maps
 - b) Pushing Remote Sensors (PReSens) – 2024 site deployment
10. 2025 Tentative Meeting Schedule (Kelli)
 - a) April 24, 2025 (Thursday morning conference call)
 - b) November 13, 2025 (Thursday afternoon in-person)
11. **Election of Officers**
12. International Collaboration with Korea Meteorological Administration (Darin)
13. Other Business
14. **Adjournment**

Bold, italicized items require Board action.

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MINUTES - NORTH DAKOTA ATMOSPHERIC RESOURCE BOARD

APRIL 24, 2024

Chairman Chris Theisen called the video meeting of the Atmospheric Resource Board (Board) to order at 10:07 a.m. CDT, April 24, 2024.

ROLL CALL

Roll call was taken. Members present were Chris Theisen, District IV; Gail Yuly, District II; Jessica Magilke, District VI; Kyle Wanner, Director, ND Aeronautics Commission; Rebekah Pfaff, ND Department of Environmental Quality (DEQ); and Andrea Travnicek, Ph.D., Director, ND Department of Water Resources (DWR).

Others present were Darin Langerud, Director; Kelli Schroeder, Program Manager; Mark Schneider, Chief Meteorologist; Daniel Brothers, Meteorologist; Jody Fischer, Weather Modification International (WMI) and Dani Quissell, ND Weather Modification Association (NDWMA).

MINUTES

IT WAS MOVED BY GAIL YULY AND SECONDED BY REBEKAH PFAFF TO APPROVE THE MINUTES OF THE NOVEMBER 2, 2023, MEETING AS DISTRIBUTED. ALL MEMBERS VOTED YEA. THERE WERE NO NAY OR ABSTAIN VOTES. MOTION CARRIED.

FINANCIAL STATUS REPORT

Kelli Schroeder reviewed the financial status report for the period ending March 31, 2024.

2024 NORTH DAKOTA CLOUD MODIFICATION PROJECT (NDCMP) PERMIT APPLICATIONS

Public Comment

Darin Langerud informed the Board that legal notice regarding the WMI permit applications was published as required by statute for two consecutive weeks in the county newspapers in the target and adjacent North Dakota counties in late February and early March. There was a 20-day period for the public to comment following the publication. The comment period ended March 28, 2024.

Forty-three comments were received by that deadline, which were included in your packets. Langerud reviewed, categorized, and summarized comments in his recommendation memo to the Board and discussed these recommendations with the Board.

In response to a question, Langerud noted that last year we received only one comment. The most previously received was eleven in 2018. Eighteen comments came from outside of the project or adjacent county areas. We are aware of Facebook posts which generated several comments from folks in the central and eastern parts of North Dakota, where there is no impact from the cloud seeding program.

In response to a question, Langerud noted that DWR intends to put out a public survey regarding the program. More will be discussed about that in agenda item 7. We are not actively monitoring social media content. All information regarding this program is public. We comply with records requests and put as much information on our web site as possible. We attend public information sessions when asked.

In response to a question, Langerud noted that positive comments are not received but are not asked for in the permitting process. Comments are requested from those who believe they will receive harm from this program. With the public survey, we will be able to receive positive feedback. Andrea Travnicek noted that we can review how public feedback is requested before the permitting process next year, so that both positive and negative feedback is requested.

In response to a question, Langerud noted that he and Schneider visit with county commissioners every year after the project is finalized. Every five years, the county commission must hold a hearing before they can consider reauthorizing the weather modification authority. Timing coincides with when they started their project. Most states have a notice and permitting process. However, a lot of those states have multi-year permits, unlike our annual process.

In response to a question, Langerud noted that in 2018 when we had a larger set of comments, he created a memo that thanked them for their comments, noted that the board considered them, recommendations and then board approval. We intend on corresponding with those who commented again.

GAIL YULY MOVED TO ACCEPT THE PUBLIC COMMENTS RELATING TO THE WMI PERMIT APPLICATIONS. SECONDED BY REBEKAH PFAFF. ALL MEMBERS VOTED AYE. THERE WERE NO NAY OR ABSTAIN VOTES. MOTION CARRIED.

Weather Modification LLC – NDCMP District 1 & 2

GAIL YULY MOVED TO APPROVE THE WEATHER MODIFICATION PERMIT APPLICATIONS FROM WEATHER MODIFICATION, LLC, OF FARGO, ND, AS RECOMMENDED BY THE DIRECTOR. SECONDED BY JESSICA MAGILKE. ALL MEMBERS VOTED AYE. THERE WERE NO NAY OR ABSTAIN VOTES. MOTION CARRIED.

NORTH DAKOTA CLOUD MODIFICATION PROJECT

Budget

Darin Langerud reviewed the draft budget for the 2024 NDCMP.

County contracts

Darin Langerud noted that a draft county contract has been reviewed by DWR's attorney. We plan to complete county contracts after this meeting.

Staffing

Mark Schneider reported he and Dan Brothers conducted interviews and reference checks on meteorologist applicants. The radar meteorologists have been chosen and accepted. They are in the process of wrapping up hiring intern meteorologists.

Kelli Schroeder has completed hiring on all 5 intern copilots. WMI may need to pull one for a captain. We will still be left with a few good candidates remaining if that is the case.

Darin Langerud noted that tomorrow afternoon Kelli and Dan are headed to Grand Forks. Dan will be a guest speaker for the weather modification class and they both will staff a booth at the Student Aviation Management Association (SAMA) Career Fair on Friday.

Jody Fischer mentioned that their team members generally live in the same locations every year. Captains have usually already been in contact with field housing management by now. The interns usually don't have to worry much about setting that up. Regarding the SAMA Career Fair, four WMI and Fargo Jet staff will be on a discussion panel Thursday morning. Three of them are former interns and will be promoting the internship. There will also be a WMI / Fargo Jet booth at the fair.

Seeding agent and supplies procurement

Mark Schneider reviewed remaining chemical inventory from last year and discussed procurement of chemicals. Due to the remaining inventory, we will not be purchasing additional silver iodide or flares.

COOPERATIVE OBSERVER NETWORK UPDATE

Growing season rainfall totals and grid maps

Daniel Brothers reported that there are currently 401 active precipitation observers, 154 of which report online. Maps will be updated online in a few days.

Pushing Remote Sensors (PRESENS) – 2024 site deployment

Daniel Brothers reported there are currently 33 PRESENS sites throughout the state that have rain gauges and soil moisture sensors attached to them. We are hoping to get 30-40 more sites installed this year. He noted that we are working with staff in the Water Appropriations division to identify existing sites for observations wells, etc., that would be good areas for rain and soil sensors. We are also in contact with North Dakota State University (NDSU) Extension agents to identify local landowners who may want to participate.

In response to a question, Brothers noted that data is currently being managed internally on DWR servers. The public can access the rain and soil data from our web site (dwr.nd.gov) under Information and Education tab, then clicking Maps/GIS & Data link, and finally the Water Resource Sites link. Langerud offered to send the Board a direct link to this data.

NDWMA PUBLIC INPUT SURVEY AND MEETINGS

Darin Langerud reviewed plans to solicit public feedback about the Board and its programs. DWR and NDWMA staff coordinated a survey to post to our web site soliciting comment from the public. Another survey will be tailored to the county weather modification authority members and county commission members in the project areas. We will share those surveys with the board via email and ask for feedback by May 1.

Langerud also reported on a couple of public listening sessions that are being planned for Bowman and Stanley, later in May.

In response to a question, Langerud noted that the makeup of the Board is set by North Dakota Century Code. Any board changes that are recommended after the survey results are analyzed would have to be approved by the legislature. If changes are policy related or below the policy level, we can integrate those without legislative involvement.

Darin Langerud briefed the Board on the status of the Bowman radar replacement project. He also briefed the Board on the Weather Modification Association Distinguished Service Award for Administrators that was bestowed upon Kelli Schroeder.

GAIL YULY MOVED TO ADJOURN THE MEETING. SECONDED BY REBEKAH PFAFF. ALL MEMBERS VOTED AYE. THERE WERE NO NAY OR ABSTAIN VOTES. MOTION CARRIED.

Being no further business, the meeting adjourned at approximately 11:14 a.m.

CHRIS THEISEN
CHAIR

REBEKAH PFAFF
SECRETARY

Transcribed by Kelli Schroeder

**ATMOSPHERIC RESOURCE BOARD
PROJECT BUDGET EXPENDITURES
FOR THE PERIOD ENDED SEPTEMBER 30, 2024
BIENNIUM TIME: 63%**

	SALARIES & WAGES 77010	OPERATING EXPENSES 77030	CAPITAL ASSETS 77050	GRANTS 77063	PROGRAM TOTALS
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ADMINISTRATION (7500) - \$1,123,800.00

Project: WA75023

Budget *	1,047,993.00	75,807.00	-	-	1,123,800.00
Expended	660,235.41	39,399.50	-	-	699,634.91
Percent	63%	52%	0%	0%	62%

OPERATIONS & RESEARCH (7600) - \$7,019,850.00

Projects: WA62023, WA62024, WA62025,
WA68023, WA68024, WA68025, & WA69998

Budget	240,724.00	571,100.00	1,845,000.00	4,363,026.00	7,019,850.00
Expended	139,208.72	210,197.35	7,355.92	1,048,604.78	1,405,366.77
Percent	58%	37%	0%	24%	20%

BUDGET *	1,288,717.00	646,907.00	1,845,000.00	4,363,026.00	8,143,650.00
EXPENDED	799,444.13	249,596.85	7,355.92	1,048,604.78	2,105,001.68
PERCENT	62%	39%	0%	24%	26%

FUNDING SOURCE:	APPROPRIATION	EXPENDITURES	BALANCE	PERCENT
General Funds	-	-	-	0%
Resource Trust Funds *	4,240,155.00	1,108,847.21	3,131,307.79	26%
County Funds	2,343,776.00	996,154.47	1,347,621.53	43%
Federal Funds	1,500,000.00	-	1,500,000.00	0%
TOTAL FUNDS: *	8,083,931.00	2,105,001.68	5,978,929.32	26%

* NOTE: FTE and board salary budget is shown under ARB Administration (7500) here for tracking purposes; but, it is held agency-wide under the DWR Administration Division. Actual ARB division appropriation budget total is \$7,095,657.

REVENUE:	
General Funds	100.00
County Funds	566,447.03
Resources Trust Funds	8,093.00
Federal Funds	-
TOTAL	574,640.03

COST REVIEW FOR THE 2024 NDCMP

Estimated for year end

ITEM	BUDGET	EXPENDITURES	UNDER/OVER
RADAR MAINTENANCE & PARTS*	27,300.00	33,198.20	(5,898.20)
AIRCRAFT SERVICES* ⁺	607,048.00	607,048.00	0.00
FLIGHT HOURS-BASE	39,783.00	27,444.96	12,338.04
FLIGHT HOURS-TOP TURBO	62,832.00	41,791.07	21,040.93
FUEL SURCHARGE	2,000.00	213.51	1,786.49
METEOROLOGISTS*	58,989.00	47,957.38	11,031.62
SEEDING MATERIALS	31,529.00	31,267.62	261.38
TRAVEL/DELIVERY/FREIGHT	3,700.00	2,558.71	1,141.29
STORAGE	1,700.00	1,485.00	215.00
GROUND SCHOOL	3,200.00	3,064.00	136.00
COMMUNICATIONS	500.00	123.10	376.90
NEWSPAPER FEES	1,600.00	1,282.26	317.74
SUPPLIES/POSTAGE	750.00	485.13	264.87
BLDG & EQUIP/UTILITY/INSURANCE	5,600.00	7,408.55	(1,808.55)
TOTAL (DOLLARS)	846,531.00	805,327.49	41,203.51

* Includes extension budget and costs

⁺ Assumes final payment with no penalties

OFF BUDGET COSTS (STATE FUNDS):

INTERN CO-PILOTS - ARB HIRED	40,411.45
RELIEF CO-PILOT - COST SHARED WITH WMI	4,750.00
TOTAL OFF BUDGET:	45,161.45

2024 NDCMP Ending Chemical Inventory

Dry Chemical	Weight	Units	Value	Tot. Value
Silver Iodide	309.1 g	180	\$162.86	\$29,314.80
Ammonium Iodide	95.4 g	180	\$22.58	\$4,064.40
Sodium Perchlorate	161.85 g	183	\$14.27	\$2,611.41
Paradichlorobenzene	1.0 lb	4.5	\$6.00	\$27.00
TOTAL, All Dry Chemicals:				\$36,017.61

Flares	Usable	Duds	Total Units	Value	Tot. Value
20g Ejectable ICE	2058	63	2121	\$35.00	\$74,235.00
75g Burn-In-Place ICE	494	8	502	\$59.85	\$30,044.70
TOTAL, All Flares:					\$104,279.70

Liquid Chemicals (gallons)	SWC Yard	ARB Shed	ISN	STN	BPP	KEN	WCT	Value per Gal	Tot. Value
Acetone				150	182			\$8.12	\$2,695.84
Mixed Solution	99.6				35.5			\$48.06	\$6,493.18
TOTAL, All Liquid Chemicals:									\$9,189.02

TOTAL, All Seeding Agents:	\$149,486.33
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Inventory Completed By: Daniel Brothers	Signature(s)	Date 9/24/24
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2024 NORTH DAKOTA CLOUD MODIFICATION PROJECT

DRY ICE REPORT

SEED 7

Dry ice purchased	18,771 lbs.
Dry ice expended	318 lbs.
Total purchase price (1.10/lb)	\$ 20,381.16
Cost per pound expended	\$ 64.06

2024 FINAL REPORT

NDCMP

NORTH DAKOTA CLOUD MODIFICATION PROJECT

Pilot & Meteorologist Internship Programs

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Cover artwork courtesy of Sheila Fryer, Graphic Artist, ND Department of Water Resources

Introduction

The Pilot Internship Program (PIP) and the Meteorology Internship Program (MIP) are designed to prepare qualified students for a professional career through participation in a summer intern position with the North Dakota Atmospheric Resource Board (NDARB) during the North Dakota Cloud Modification Project (NDCMP).

The Atmospheric Resource Board in cooperation with the University of North Dakota's John D. Odegard School of Aerospace Sciences (UND) have long recognized their shared roles in providing appropriate experience for students and young professionals. During the 2024 NDCMP, eight qualified young people worked as interns on a full-time basis. The NDARB internships are an important milestone for the students, enabling them to gain unique insight and experience and to have important responsibility directly in their field of interest. NDARB constantly seeks to improve its training process and the entire internship experience. The knowledge and skills acquired by the students enhance the development and stature of an emerging workforce.

History

The Pilot Internship Program (PIP) began in 1974 with a \$274,000 grant from the National Science Foundation to the University of North Dakota for an "experimental project for training pilots in weather modification." The program was instantly successful, enrolling 70 students through the fall semester of 1976. That year, the ND Weather Modification Board (now Atmospheric Resource Board) entered into contract with UND to employ 14 interns on its summer cloud seeding program. By the mid-1980's, the Bureau of Reclamation ceased to fund the program. The NDARB continued funding the program until 2003, when funding was no longer available. The Board did continue the program by making internships available, however, only on a volunteer basis. Funding was restored for the program during the 2005 Legislative Assembly.

A Memorandum of Understanding between NDARB and UND outlines the responsibilities of both entities to create an opportunity to prepare students for a professional career through participation in a summer intern position. Specific criteria are required to be eligible for the PIP. At the completion of the 2024 program, the program has provided training and experience for 412 pilots.

The NDCMP Meteorology Internship Program began in 1996 and to date has provided hands-on radar, operations and forecasting experience for 76 meteorology undergraduates and graduates.

Program Description

The following presents an outline of the program, its objectives, design, and main delivery components.

Program Objectives

- Encourage students to expand their education beyond the classroom.
- Enable students to sample actual situations and prepare for Pilot-In-Command (PIC) and Radar Meteorologist duties.
- Develop professional work habits and improve interpersonal skills of students.
- Establish a pool of potential professional employees who have demonstrated their abilities to assume in-command responsibilities.

Qualifications

Candidates for the MIP must be at least an undergraduate pursuing a degree in meteorology or atmospheric sciences. Applicants must apply and are scored and rated for selection by NDARB.

Candidates for the PIP must be at least an undergraduate pursuing an Aviation-related degree at UND. Applicants must apply and are scored and rated for selection by NDARB and UND.

Selection criteria for the PIP includes:

- Ratings: must have multi-engine commercial instrument rating completed by April 30.
- Motivation: class attendance, extra credit work, and overall enthusiasm for fieldwork.
- GPA: Complete the Applied Weather Modification class.
- Flight hours: total and multi-engine time.
- Related work experience.

Since 2018 due to a lack of applicants who were in the Applied Weather Modification class or had taken the class previously, NDARB accepted applications from UND student pilots who did not take the class. Preference was given to students who are in the class or have taken it in the past.

Program Design

The PIP is designed for the primary benefit of the persons placed on the program including multi-engine flight hours (number of hours dependent on weather conditions), Instrument

Flight Rules (IFR) and adverse weather flight experience, and operations experience for future employment as weather modification Pilots-In-Command (PIC).

The MIP is designed for the primary benefit of providing hands-on radar experience, real-time weather observations, weather forecasting experience, and operations experience for future employment as weather modification radar meteorologists.

The programs are designed for positive, active involvement of the interns. The decision whether or not to allow each pilot intern to fly the airplane (from left or right seat) rests with the PIC. In the case of the MIP, the supervising Radar Meteorologist determines when a meteorologist intern is qualified to run operations during a mission. It is most beneficial if the interns receive direct, hands-on experience. In general, the assignment of each intern is to learn the duties of his/her supervisor/mentor. This includes the following areas of involvement:

- Conduct of seeding missions according to project guidelines.
- Detailed record-keeping of all missions.
- Seeding equipment maintenance.
- Visual surveillance of the weather.
- Representing the project to the public.
- Duties that will meet project objectives as directed by NDARB.

Support and Supervision

The NDCMP is a 24/7 project for 92 days, or longer if an extension occurs, and ongoing communications are vital. Each intern was assigned a Supervisor/Mentor who offered guidance, encouragement, and general counsel. An “always-available” policy enabled the interns’ access to individuals at any time for answers to questions, accept feedback, and help with project objectives. This policy created an environment in which the interns felt comfortable asking questions, and aided in keeping the interns productive, no matter what time of the day or night.

Orientation & Pre-project Training

Orientation and training were accomplished for the ND Cloud Modification Project Ground School on May 29 through 31, 2024. All project personnel were required to attend. During Ground School, the interns received a detailed overview of cloud seeding science and technology, and information that clarified their specific tasks and roles on the NDCMP, including operations, policy, rules and regulations.

Accountability

Daily, participants were required to document the number of hours worked using the agency's web-based time-reporting system. At the end of the workweek, the supervising PICs or meteorologists reviewed, commented and approved the interns' hours, which were forwarded to NDARB via email. The comments served to track performance and the time entry provided a database of official hours worked for Fair Labor Standards Act and payroll purposes.

ARB full-time staff made multiple visits to field locations to check on quantity and quality of work, receive and make suggestions and criticisms, and consider adjustments to the program.

Continuing Development

Participants were encouraged to become involved in networking with NDARB and contractor employees. Sharing information on work experiences and performance is critical to the professional development and growth of the individual. Feedback on the intern's progress was provided as a professional development tool and to provide clarification of NDARB's expectations of what constitutes quality performance on the job.

Approximately two months into the internship, the supervisors/mentors conducted peer-review evaluations of the participants and discussed the results with them. The interns were also asked to evaluate the internship program. The program manager and chief meteorologist then visited with each intern and offered comments and critical suggestions for improvement and further development. At this time, comments were also received from the interns regarding possible changes and improvements to the program for the future.

Legal Considerations

Interns of the NDARB are temporary unclassified employees and were paid at the rate of \$16.32 per hour. The NDARB workweek is from Monday at 12:00 a.m. to Sunday at 11:59 p.m. Any overtime hours worked within the workweek required prior authorization. Internship employees were covered under the agency's Workforce Safety policy.

Program Information

During the 2024 NDCMP, the 5 PIP interns worked a total of 2,113.5 hours. These hours were spent at weather briefings, operations flight missions, chemical mixing and inventory, record keeping, aircraft and seeding equipment maintenance, alert status prior to launch, and public relations.

Intern pilots are rotated through the Watford City location to give all a chance to experience high-altitude turbo-prop aircraft operations.

The 3 MIP interns worked a total of 1,258 hours. These hours were spent at weather briefings, forecasting, assisting with operations flight missions, radar watch, record keeping, and public relations. All project personnel are responsible for “weather watch” at all times during the project.

Each intern meteorologist was given the opportunity to rotate through the two radar locations. This gave each intern a chance to experience operations in each district.

Most intern participants had completed their internship and left the project by mid-August to return to college.

2024 Participants

Pilot Interns & Field Site:

Peyton Underwood, Seed 1, Bowman
Payton Belzer, Seed 2, Bowman
Alessandro McDonald, Seed 4, Stanley
Alex Craven, Seed 5, Williston
Jackie Venters, King Air Rover

Meteorologist Interns & Field Site:

Joe Russell, Bowman
Grant Peterson, Stanley
Parker Alvstad, Stanley

Recommendations

The following are recommendations from students for consideration for future efforts:

Meteorology Internship Program

- Increase focus on meteorology and communications during Ground School, with some repetition to increase confidence going into the project.
- During Ground School, emphasize that every mission will be different.
- Pay interns every two weeks or on the first of the month if it must be monthly.
- Allow field staff to engage with public posts about the program on social media to improve transparency.

Pilot Internship Program

- Do more public relations work, both in general and by interns specifically.
- Be more upfront about difficulty finding enough work hours per week due to weather.
- Change the intern time entry system to allow editing time entries on the web, so that interns can edit their own mistakes.

Acknowledgements

NDARB wishes to thank the Radar Meteorologists and Pilots-In-Command for their efforts and assistance in serving as supervisors and mentors during the 2024 NDCMP Internship Programs. They are as follows.

Pilots-In-Command

Derek Winkelhaus, Seed 1, Bowman
Camron Pflueger, Seed 2, Bowman
Max Langerud, Seed 4, Stanley
Austin Krause, Seed 5, Williston
Jake Floyd, Seed 7, Watford City

Radar Meteorologists

Ashley Cade, Bowman
Ben Schaefer, Stanley

NDARB also appreciates the efforts of the following.

- Dr. David Delene, UND John D. Odegard School of Aerospace Sciences
- Jody Fischer, Vice President of Operations, Weather Modification, International
- Kirk Hamilton, Chief Pilot, Weather Modification, International
- Alex Sailsbury, UAS Operations Specialist, Weather Modification, International
- Erin Fischer, Client Services Director, Weather Modification, International
- Jake Van Ornum, Documentation Specialist, Weather Modification, International
- Brady Wolkow, Client Services, Weather Modification, International
- Oakley Eagleson, Relief Intern, Weather Modification, International
- Lynnlee Rosolino, UND John D. Odegard School of Aerospace Sciences

We would also like to congratulate Jackie Venters (recipient of the 2024 Hans P. Ahlness Intern Award) for her dedication to the program, hard work, and ambition.

Attachments

- Intern Performance Evaluation
- Evaluation of Meteorology and Pilot Internship Program



**NORTH DAKOTA CLOUD MODIFICATION PROJECT
 INTERN PERFORMANCE EVALUATION**
 NORTH DAKOTA DEPARTMENT OF WATER RESOURCES
 ATMOSPHERIC RESOURCE BOARD
 SFN 61334 (8/2021)

The evaluating supervisor will complete the evaluation. We urge that each supervisor evaluate the intern's performance together with him/her. Please be candid. This joint evaluation is of paramount importance to the intern's professional and personal development. The evaluation will be a guide for counseling the intern. Additional space is provided for your comments. Please comment on any evaluation marked marginal or unsatisfactory.

Please place an "X" in the appropriate column for each characteristic.

Intern Name					Date	
Characteristics	Excellent	Very Good	Average	Marginal	Unsatisfactory	Not Applicable
Desire and willingness to take on new assignments						
Potential for further development						
Concern for needs of fellow employees						
Willingness to work through an assignment to completion						
Ability to communicate						
Quality of work						
Dependability						
Attitude (application to work)						
Attendance						
On-time						
Judgment						
Imaginativeness and resourcefulness						
Cooperation – willingness to get along with others						
Technical skills						
Interpersonal skills – general public						

Intern Name	Date
Narrative appraisal of performance	
Additional comments and/or recommendations	
I understand that this intern will have access to the information in this evaluation and that it is a public record. I have discussed this evaluation with the intern.	
Signature	Date



**NORTH DAKOTA CLOUD MODIFICATION PROJECT
INTERNSHIP PROGRAM EVALUATION**
NORTH DAKOTA DEPARTMENT OF WATER RESOURCES
ATMOSPHERIC RESOURCE BOARD
SFN 61335 (8/2021)

Name

Evaluation of: (Please place "X" in the first column and appropriate row.)

	METEOROLOGY INTERNSHIP PROGRAM
	PILOT INTERNSHIP PROGRAM

This evaluation will be very important in determining the value of your work experience, both for yourself and for students who may wish to follow you in the same situation. The evaluation should be honest and indicate problems as well as your progress during the period. Please address your evaluative remarks so that your coordinator can discuss them with the organization to improve and maintain the program.

In what ways did your classes prepare you for your internship?

What other courses and/or work experience do you think would have helped you with this internship?

What was the most helpful thing your supervisor did to make you feel comfortable as a staff member?

In what manner has this assignment contributed to your professional development?

Prior to beginning your job, did the agency give you adequate information to start your project?

Do you consider the Internship Program relevant and meaningful to your short/long-term career interests?

List three things you plan to do differently as a result of this program.

How would you rate the educational value of your internship?	
<input type="checkbox"/>	Exceptional opportunity.
<input type="checkbox"/>	Worthwhile experience.
<input type="checkbox"/>	Generally not too useful, but might help some.
<input type="checkbox"/>	Probably of no value (please comment).
Comments	
How was the experience related to your major field or career goals?	
<input type="checkbox"/>	Very closely related.
<input type="checkbox"/>	Related through occasional assignments.
<input type="checkbox"/>	No relationship exists.
<input type="checkbox"/>	Not applicable (please comment).
Comments	
To what degree do you feel other employees supported the internship program?	
<input type="checkbox"/>	Atmosphere was openly supportive.
<input type="checkbox"/>	Accepted, but not openly supportive.
<input type="checkbox"/>	Generally not accepted or understood.
<input type="checkbox"/>	Non-supportive and potentially hostile.
<input type="checkbox"/>	Does not apply (please comment).
Comments	
How would you rate your salary in relation to requirements of position, your experience, and your academic level?	
<input type="checkbox"/>	Position paid comparably to full-time employees.
<input type="checkbox"/>	Position well paid.
<input type="checkbox"/>	Definitely underpaid for service expected.
<input type="checkbox"/>	Does not apply (please comment).
Comments	
Were the actual duties of the position commensurate with the job description?	
<input type="checkbox"/>	Experience closely matches that offered.
<input type="checkbox"/>	Experience mostly matches that offered.
<input type="checkbox"/>	Little relationship exists.
<input type="checkbox"/>	Extremely unsatisfactory (please comment).
Comments	
How did your technical skills apply to the position?	
<input type="checkbox"/>	Were more than adequate.
<input type="checkbox"/>	Were adequate.
<input type="checkbox"/>	Were less than they should have been.
Comments	

Did you receive a proper job orientation?	
<input type="checkbox"/>	Complete, accurate.
<input type="checkbox"/>	Somewhat related.
<input type="checkbox"/>	Had no meaning.
<input type="checkbox"/>	Does not apply.
Comments	
Evaluate your supervisor's willingness and capability of answering questions.	
<input type="checkbox"/>	Exceeded expectations.
<input type="checkbox"/>	Met expectations.
<input type="checkbox"/>	Less than expected.
Comments	
Evaluate your supervisor's availability when needed for questions, etc.	
<input type="checkbox"/>	Exceeded expectations.
<input type="checkbox"/>	Met expectations.
<input type="checkbox"/>	Less than expected.
Comments	
Evaluate your supervisor's receptiveness to new ideas you might have had?	
<input type="checkbox"/>	Exceeded expectations.
<input type="checkbox"/>	Met expectations.
<input type="checkbox"/>	Less than expected.
Comments	
How would you rate your relationship with supervisor?	
<input type="checkbox"/>	Exceeded expectations.
<input type="checkbox"/>	Met expectations.
<input type="checkbox"/>	Less than expected.
Comments	
What changes, if any, would you recommend in your internship?	
What other areas of experience would you like to acquire through this internship?	

Overall Rating	
	Excellent
	Very Good
	Average
	Marginal
	Unsatisfactory

NARRATIVE EVALUATION

The second part of the evaluation requires a narrative evaluation of the work that was done during the internship. Please include in the narrative the following topics:

- The role your position plays in the overall goals and mission of the project.
- Relationship of the position to the organization's structure.
- Academic classes that prepared you or fell short of preparing you for the job.
- Problem-solving techniques used.
- Communication skills used.
- Leadership skills used.
- Decision-making skills used.
- Administrative skills used.
- Agency staff assistance.
- Success and failure experienced.
- Any recommendations.

Your Narrative

Any photos, articles, etc. may be included with the evaluation. Please indicate properly the source of all such material.


I understand this evaluation and narrative will be used to evaluate the Internship program and is a public record.

Signature

Date

MEMORANDUM

TO: ATMOSPHERIC RESOURCE BOARD

FROM: DARIN LANGERUD, DIRECTOR 

SUBJECT: 2024 NDCMP LIQUIDATED DAMAGES

DATE: OCTOBER 29, 2024

In consideration of daily NDCMP aircraft operational requirements outlined in contract ARB-WMI-22-1, the operations reviewed and Director's recommendations in such cases follow. The pertinent contract language is stated below:

ARTICLE XII: LIQUIDATED DAMAGES

Due to the difficulties that would arise in determining the State's damages upon Contractor's breach, the parties, after careful consideration, agree that Contractor must pay damages to the State in the amounts specified below.

1. For each operational day during the Project period that a specific aircraft is inoperable, whenever personnel are unable to conduct a Project flight, or whenever the Contractor refuses to conduct a Project flight after being instructed to do so by the Board, the Contractor must be subject to damages of 2% of the aircraft base cost bid per day:
 - A. \$1,640.00, \$1,689.20, and \$1,739.88 per day for cloud-base seeding aircraft during the 2022, 2023, and 2024 Project seasons, respectively.
 - B. \$4,100.00, \$4,223.00, and \$4,379.70 per day for cloud-top seeding aircraft during the 2022, 2023, and 2024 Project seasons, respectively.
2. The Director will determine those days during which seeding capability was lost due to an inoperable aircraft. The Director, by discretion, may waive portions or all such damages if satisfied that the Contractor demonstrated all reasonable efforts were made to return the subject aircraft to operational status during such days.

Reviewed Cases

Incident #1 Seed 7 (N709EA) on 6/3/24.

Description:

Seed 7 left Watford City and flew to Fargo for maintenance at 1200Z due to radio communication issues. When maintenance was completed early evening, they left Fargo at 2213Z to fly back to District 2, where they joined a seeding mission already in progress by Seeds 4 and 5. Seed 5 began seeding at 2224Z (Seed 4 at 2303Z), a full hour before Seed 7 returned to district and began seeding at 0036Z. The hail threat was high enough that both base seeders used multiple burn-in-place flares in addition to their wing tip generators to seed storms while Seed 7 was enroute from Fargo.

Recommendation:

One-half day penalty for late flight on June 3.

Incident #2 Seed 2 (N13AG) on 6/10/24.

Description:

On 6/3/24, Seed 2 flew a seeding flight for dual purpose seeding from 2119-2325Z and while they were returning to base, the oil temperature on their right engine spiked. WMI had Seed 2 swap the oil temperature sensor from the left engine to see if that was the issue and it wasn't. Seed 2 remained unavailable for seeding flights until 6/14/24 when mechanics figured out the issue. Had Seed 2 been available for operations during the afternoon and evening of 6/10 then they would've been utilized (Seed 1 conducted two seeding flights on this day).

Recommendation:

One day penalty for missed flights on June 10.

Incident #3 Seed 5 (N798C) on 6/17/24.

Description:

On the morning of 6/17/24, Seed 5 left Williston at 1133Z and flew to Fargo for maintenance. Seed 5 remained in Fargo for the entirety of the morning and afternoon and then left Fargo at 2250Z to return to Williston. The Stanley meteorologists launched Seed 4 and Seed 7 while Seed 5 was enroute back to district, but those flights were reconnaissance only due to the embedded conditions. Had Seed 5 been available, the meteorologists would have launched them before Seed 4 to base seed; however considering that seedable conditions were not found during the mission, no penalty is recommended.

Recommendation:

No penalty recommended.

Incident #4 Seed 2 (N13AG) on 6/22/24.

Description:

On takeoff for a hail suppression flight (Engines on at 2319Z), Seed 2 experienced a bird strike on their left engine and immediately returned to the airport. A mechanic examined the aircraft and on 6/23/24 at 0249Z, Seed 2 returned to service. Seed 1 and Seed 7 actively seeded a hail threat between 2341Z and 0141Z through the Slope Townships. The bird strike was an "act of nature" and nothing that could be foreseen such as a wing tip generator needing maintenance.

Recommendation:

No penalty recommended.

Incident #5 Seed 2 (N13AG) on 7/13/24.

Description:

At 1745Z Seed 2 was taken out of service to replace a tachometer. With a significant hail event forecast for that evening, Seed 4 was repositioned from Tioga (temporarily there instead of Stanley due to runway work) to Bowman to assist as a second base seeder. Seed 4 seeded for hail suppression that evening and then returned to District 2. District 2 did not have any seeding operations that evening. At 0145Z on 7/17/24 Seed 2 completed a maintenance flight and returned to service.


Recommendation:

No penalty recommended.

SUMMARY RECOMMENDATION:

One-half day penalty. Seed 7, June 3:	\$2,189.85
One day penalty. Seed 2, June 10:	<u>\$1,739.88</u>
	\$3,929.73

MEMORANDUM

TO: Atmospheric Resource Board members, ND Weather Modification Authorities
FROM: Andrea Travnicek, ND Department of Water Resources Director; Ex Officio ARB Board Member
Darin Langerud, ARB Director 
SUBJECT: Atmospheric Resource Board and North Dakota Cloud Modification Program—Public Survey and Listening Sessions
DATE: October 28, 2024

Background

To collect feedback from the public regarding the makeup of the Atmospheric Resources Board (ARB), the North Dakota Cloud Modification Project (NDCMP), current active partnerships, research priorities, and public perfection of the ARB and its associated projects, the ARB, in partnership with the ND Weather Modification Association, opened an online survey to the public and conducted two onsite public listening sessions in counties that participate in the program. Additionally, a separate survey was distributed to active Weather Modification Authorities in ND for their feedback on the NDCMP and available resources.

The Weather Modification Authorities survey was published and emailed directly to the Authorities on May 6, 2024. The survey closed on May 31, 2024. Seven people responded to the survey.

The public survey was made available to the public on May 6, 2024. The survey link was published on the DWR Facebook page, sent out in a news release, and shared on the DWR website. The survey closed May 31, 2024. Thirty-eight people responded to the survey.

The onsite public listening meetings included a presentation from the ARB regarding the history of cloud seeding in North Dakota, studies indicating the efficacy of the program, science behind the methodology, and how/where the program is administered. After the presentation, the attendees were welcome to provide public comment.

The public meetings were announced on the DWR Facebook page, on the DWR website, and in a news release. The first public meeting was on May 21, 2024, in Bowman, ND. Five people attended. The second public meeting was on May 24, 2024, in Stanley, ND. Eight people attended.

Summary of Public Survey Responses and Public Comments

** The statements made in the comments are presented as received and may not accurately represent current statute or operations.*

- In response to questions about the ARB structure and duties, the following general suggestions and comments were made:
 - The whole state should be represented on the board—either on a district level or a county level.
 - Counties with active programs should have an elected member to the Board.
 - More representation from the agricultural sector should be considered.
 - ARB members should be elected members rather than appointed by the Governor.
 - Transfer ARB oversight away from the ND Department of Water Resources to the Department of Agriculture.
- Respondents indicated both a desire for less state funding for the program (down to 0%) and increased funding (up to 50%) for NDCMP to support local governments.
- There were several requests for expansion of public outreach and education on the NDCMP.
- When asked about their awareness of the ARB’s partnerships, respondents indicated being most familiar with the North Dakota Weather Modification Association (27), Airport partnerships (26), the Williston Radar (25), and the UND Pilot Internship Program (23). Bowman Radar (18) and other national and regional partnerships (15) had the smallest amount of awareness.
- The UND pilot internship program generally received positive feedback. There was some confusion about the interns’ experience and safety while flying.
- The radars had support from respondents.
- In response to questions about the process to stand up a Weather Modification Authority, the following general suggestions and comments were made:
 - The public should vote to renew the Authority more often than every 10 years.
 - The Weather Modification Authority should only be stood up through a public vote and not a petition.
- For county-level Weather Modification Authorities, respondents indicated the following:
 - The makeup of the local Authority does not necessarily represent the entire county population.
 - Representatives of the local Authorities should be voted in by the public and not appointed by the County.
 - Several local concerns were brought up that the local Authorities do not listen to the public.
- Concerns outside of the scope of the survey were raised in the general comment text fields including the following:
 - Concerns for the environment including water, air, and soil quality.

- Respondents indicated that they believe the science behind cloud seeding is fundamentally inaccurate, disrupts the natural trends and behavior of weather, and is harmful to the environment.
- Respondents noted a lack of support for NDCMP from the ND Department of Agriculture, ND Tax Department, ND Insurance Department, commodity groups and insurance companies.
- Respondents provided perceived impacts of the NDCMP within their regions.

Summary of Responses from Weather Modification Authorities:

- When asked about cost-share from the state, respondents requested either to maintain current funding levels or to increase state funding to make it more affordable for the counties that wish to participate.
- Respondents indicate that hail suppression, rain enhancement, and lower insurance rates along with higher long term crop yields are the benefits of the program in their area.
- Respondents request more public education, outreach, and presentations
- Respondents indicate their largest concern from their communities is that the program will cease to exist or that some people believe the program is not beneficial.

Options For Consideration

- Increase involvement by the agricultural community with ARB. Some options include the following:
 - Work with the ND Department of Agriculture on having representation on the ARB.
 - Work with the ND Weather Modification Association to amend ND commodity group resolutions in support of weather modification.
 - Partner directly with ag groups and representatives to provide feedback on the NDCMP.
- Expand outreach and education opportunities to include the following:
 - Cloud seeding science and efficacy
 - How the intern pilots and meteorologists are used alongside trained professionals. There was confusion in the comments about interns being alone in unsafe situations.
 - Increase partnerships with agriculture commodity groups and ND institutions.
- Explore partnerships and joint efforts with the ND Insurance Department
- Explore additional studies on cloud seeding in ND including eastern county viability and ND-specific research on insurance premiums related to weather.

View results

Respondent
2 Anonymous

06:33
Time to complete

1. Name *

Paul Weyrauch

2. County and District *

- Bowman (District 1)
- McKenzie (District 2)
- Mountrail (District 2)
- Slope (District 1)
- Williams (District 2)

3. Contact phone number or email

4. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Sufficient

5. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

No comments

6. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

It's working

7. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

No

8. What benefits do you see by having the NDCMP available in your region?

Lower insurance rates, higher long term crop yields

9. What resources and support would make the weather modification program more impactful?

Education not only to those who want it and seek it out but for those that need it and seem to dwell on Facebook fake news

10. Do you have concerns about the NDCMP?

None other than it may cease to exist

11. What are common questions or concerns you hear from the community?

When are you going to shut this system down?

12. Is there anything that the Board or Association can develop to better support the Weather Modification Authority?

Education programs and push them out.

13. There is an established process in N.D.C.C. ch. 61-04.1 to set up and manage the Weather Modification Authority. This chapter can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-01>

In your perspective as a board member, do you think that this process is sufficient? Do you think there are areas for improvement?

Unknown

14. What concerns do you have about the function and support of the Weather Modification Authority?

Concerned that they will be out of a job as the program is shut down.

15. Please provide any other comments you have about NDCMP and the Weather Modification Authority support from the Board and Association here.

View results

Respondent
3 Anonymous

15:30
Time to complete

1. Name *

Jeff Knox

2. County and District *

- Bowman (District 1)
- McKenzie (District 2)
- Mountrail (District 2)
- Slope (District 1)
- Williams (District 2)

3. Contact phone number or email

jknoxray@gmail.com

4. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

yes

5. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

no

6. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

no

7. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

no

8. What benefits do you see by having the NDCMP available in your region?

Rain Enhancement, hail suppression

9. What resources and support would make the weather modification program more impactful?

Public education

10. Do you have concerns about the NDCMP?

no

11. What are common questions or concerns you hear from the community?

Causes the storms to dissipate. Unhealthy

12. Is there anything that the Board or Association can develop to better support the Weather Modification Authority?

no

13. There is an established process in N.D.C.C. ch. 61-04.1 to set up and manage the Weather Modification Authority. This chapter can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-01>

In your perspective as a board member, do you think that this process is sufficient? Do you think there are areas for improvement?

no

14. What concerns do you have about the function and support of the Weather Modification Authority?

no

15. Please provide any other comments you have about NDCMP and the Weather Modification Authority support from the Board and Association here.

none

View results

Respondent
4 Anonymous

07:21
Time to complete

1. Name *

Ryan Brewer

2. County and District *

- Bowman (District 1)
- McKenzie (District 2)
- Mountrail (District 2)
- Slope (District 1)
- Williams (District 2)

3. Contact phone number or email

7015236548

4. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Yes

5. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

No

6. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

Nono

7. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

No

8. What benefits do you see by having the NDCMP available in your region?

Hail suppression

9. What resources and support would make the weather modification program more impactful?

More state funding would make it easier for counties to afford it

10. Do you have concerns about the NDCMP?

No

11. What are common questions or concerns you hear from the community?

Not many

12. Is there anything that the Board or Association can develop to better support the Weather Modification Authority?

I don't think so

13. There is an established process in N.D.C.C. ch. 61-04.1 to set up and manage the Weather Modification Authority. This chapter can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-01>

In your perspective as a board member, do you think that this process is sufficient? Do you think there are areas for improvement?

Yes

14. What concerns do you have about the function and support of the Weather Modification Authority?

None

15. Please provide any other comments you have about NDCMP and the Weather Modification Authority support from the Board and Association here.

View results

Respondent
5 Anonymous

25:26
Time to complete

1. Name *

Wes Andrews

2. County and District *

- Bowman (District 1)
- McKenzie (District 2)
- Mountrail (District 2)
- Slope (District 1)
- Williams (District 2)

3. Contact phone number or email

7015236564

4. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Yes

5. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

No

6. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

No

7. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

No

8. What benefits do you see by having the NDCMP available in your region?

Hail suppression

9. What resources and support would make the weather modification program more impactful?

Using more planes and starting in Montana

10. Do you have concerns about the NDCMP?

Possibly not enough public education

11. What are common questions or concerns you hear from the community?

Weather modification causes drought- breaks up the clouds

12. Is there anything that the Board or Association can develop to better support the Weather Modification Authority?

Not sure

13. There is an established process in N.D.C.C. ch. 61-04.1 to set up and manage the Weather Modification Authority. This chapter can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-01>

In your perspective as a board member, do you think that this process is sufficient? Do you think there are areas for improvement?

Yes

14. What concerns do you have about the function and support of the Weather Modification Authority?

None

15. Please provide any other comments you have about NDCMP and the Weather Modification Authority support from the Board and Association here.

None

View results

Respondent
6 Anonymous

04:24
Time to complete

1. Name *

Cierra Aamodt

2. County and District *

- Bowman (District 1)
- McKenzie (District 2)
- Mountrail (District 2)
- Slope (District 1)
- Williams (District 2)

3. Contact phone number or email

7017706794

4. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Yes, I believe so.

5. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

No, I do not.

6. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

No.

7. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

No, I do not.

8. What benefits do you see by having the NDCMP available in your region?

I hope it does help reduce the severity of the hail in the storms.

9. What resources and support would make the weather modification program more impactful?

More public outreach, presentations, demonstrations.

10. Do you have concerns about the NDCMP?

No

11. What are common questions or concerns you hear from the community?

1 - We should not be altering Mother Nature's Weather.
2 - Is the Iodide sprayed harmful
3 - Cloud Seeding causes drought

12. Is there anything that the Board or Association can develop to better support the Weather Modification Authority?

More public outreach, presentations, demonstrations.

13. There is an established process in N.D.C.C. ch. 61-04.1 to set up and manage the Weather Modification Authority. This chapter can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-01>

In your perspective as a board member, do you think that this process is sufficient? Do you think there are areas for improvement?

I believe it is sufficient. It was voted on to be created by the people. If a majority of people wish to attempt a petition of signatures to have it voted on again, that is fair.

14. What concerns do you have about the function and support of the Weather Modification Authority?

I feel like more engagement and public outreach could help inform some people.

15. Please provide any other comments you have about NDCMP and the Weather Modification Authority support from the Board and Association here.

View results

Respondent
7 Anonymous

03:40
Time to complete

1. Name *

Roger Flatland

2. County and District *

- Bowman (District 1)
- McKenzie (District 2)
- Mountrail (District 2)
- Slope (District 1)
- Williams (District 2)

3. Contact phone number or email

7017701942

4. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

yes

5. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

yes

6. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

none

7. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

none

8. What benefits do you see by having the NDCMP available in your region?

less hail

9. What resources and support would make the weather modification program more impactful?

I don't know

10. Do you have concerns about the NDCMP?

no

11. What are common questions or concerns you hear from the community?

is it worthwhile, petitions to stop it

12. Is there anything that the Board or Association can develop to better support the Weather Modification Authority?

Not that I know of

13. There is an established process in N.D.C.C. ch. 61-04.1 to set up and manage the Weather Modification Authority. This chapter can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-01>

In your perspective as a board member, do you think that this process is sufficient? Do you think there are areas for improvement?

yes

14. What concerns do you have about the function and support of the Weather Modification Authority?

nothing

15. Please provide any other comments you have about NDCMP and the Weather Modification Authority support from the Board and Association here.

I hope it continues

View results

Respondent
8 Anonymous

09:47
Time to complete

1. Name *

Wayne Mmak

2. County and District *

- Bowman (District 1)
- McKenzie (District 2)
- Mountrail (District 2)
- Slope (District 1)
- Williams (District 2)

3. Contact phone number or email

701 523 6368

4. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

I think it is sufficient

5. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

No

6. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

I feel the cost share is fair as the cost per seeded acre is very reasonable

7. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

No

8. What benefits do you see by having the NDCMP available in your region?

Hail suppression is a must in our district. And I feel rain enhancement is improving steadily

9. What resources and support would make the weather modification program more impactful?

If we could acquire more buffer zones

10. Do you have concerns about the NDCMP?

No

11. What are common questions or concerns you hear from the community?

Splitting clouds and chasing them away

12. Is there anything that the Board or Association can develop to better support the Weather Modification Authority?

More education to the public

13. There is an established process in N.D.C.C. ch. 61-04.1 to set up and manage the Weather Modification Authority. This chapter can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-01>

In your perspective as a board member, do you think that this process is sufficient? Do you think there are areas for improvement?

It is sufficient

14. What concerns do you have about the function and support of the Weather Modification Authority?

None

15. Please provide any other comments you have about NDCMP and the Weather Modification Authority support from the Board and Association here.

View results

Respondent
1 Anonymous

09:01
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Yes. Keep up the good work and let science and results drive future decisions. Not emotions.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

No

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

No

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

No

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Keep it going

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Keep it going

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Expand. More information to the public will show facts instead of Facebook hearsay driving protests.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

No

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

No

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

- NDCMP Webpage: <https://www.dwr.nd.gov/arb/ndcmp/>
- North Dakota Cloud Seeding Questions and Answers: https://www.dwr.nd.gov/arb/ndcmp/pdfs/q_a.pdf

11. A Weather Modification Authority may be set up through a public vote or petition as detailed in N.D.C.C. ch. 61-04.1. The full process can be found here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-23>

Is this process sufficient? Do you have suggestions on improving this process?

Is sufficient

12. What are the perceived impacts of this program in your area?

Misinformation is rampant and driving emotions. If you don't get more proactive this program will end due to lack of public support.

13. Do you have any comments on the NDCMP?

It's a good program with an increasing opposition.

14. Name *

Anony mous

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Williams
- I do not live in North Dakota

16. Contact phone number or email

View results

Respondent
2 Anonymous

09:36
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Each county should have representation somehow either by county or districts.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

Weather modification needs to go. It isn't peoples jobs to "play God" and nobody "owns the rain". These programs haven't been proven beneficial for all, and in fact, are proving to be quite wasteful. Our tax money should be used to provide programs that benefit everyone. These programs have been detrimental to the rain on our pastures and farmland.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

Waste of money!

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

It's ridiculous. The pollution that the planes give off, cost of jet fuel and chemicals in the air are not okay. Stop these programs.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

End it.

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

End the weather modification. It's not your role to "play God".

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

Stop the programs and stop wasting money.

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

Stop the programs and stop wasting money.

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

- NDCMP Webpage: <https://www.dwr.nd.gov/arb/ndcmp/>
- North Dakota Cloud Seeding Questions and Answers: https://www.dwr.nd.gov/arb/ndcmp/pdfs/q_a.pdf

11. A Weather Modification Authority may be set up through a public vote or petition as detailed in N.D.C.C. ch. 61-04.1. The full process can be found here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-23>

Is this process sufficient? Do you have suggestions on improving this process?

It's amazing how people have to fight so hard to do away with old, outdated programs that are not beneficial to all. These programs have put more pollution out there, caused oil counties to use more dust control and have been detrimental to our ranching practices. It needs to end.

12. What are the perceived impacts of this program in your area?

It's amazing how people have to fight so hard to do away with old, outdated programs that are not beneficial to all. These programs have put more pollution out there, caused oil counties to use more dust control and have been detrimental to our ranching practices. It needs to end.

13. Do you have any comments on the NDCMP?

End weather modification. It's frustrating how much money and resources are wasted. These programs have put more pollution out there, caused oil counties to use more dust control and have been detrimental to our ranching practices. It needs to end.

14. Name *

Paige Uran

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

Paigeuran@gmail.com

View results

Respondent
3 Anonymous

20:39
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

No. all farmers on local board. Not an good representation of the county population

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

The duty's of the board assume that weather modification is beneficial and wanted by the public.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

I do not support the use of public funds to modify weather patterns. If a county want to participate in weather modification they should be responsible for 100%of the cost.

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

I think the weather modification program should be abolished.

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

There is a significant shortage of pilots the program will not be effected by eliminating the weather mod program.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Local radar is outdated, not needed or used by the public at a level to justify the cost of operation.

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

I believe that only good will come from eliminating the weather modification board and redirecting the resource to other entities.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

Weather modification is not necessary

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

Weather modification is not necessary

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

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11. A Weather Modification Authority may be set up through a public vote or petition as detailed in N.D.C.C. ch. 61-04.1. The full process can be found here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-23>

Is this process sufficient? Do you have suggestions on improving this process?

12. What are the perceived impacts of this program in your area?

The impacts that I have seen, not perceived is a reduction in rainfall, watching planes fly into building clouds and the clouds dissipating. Nothing good comes from weather modification. Gods design is perfect in all ways. We need hail to heal our soil and add organic matter. It is part of the design.

13. Do you have any comments on the NDCMP?

The NDCMP is outdated. Using data that I believe isn't accurate to continue its programs. It's time to accept it was a bad program and move on rather than trying to fix something that can't be fixed.

14. Name *

Dustin Roise

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

View results

Respondent
4 Anonymous

27:27
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

No, it does not represent the farmers of these counties.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

Rules should be discussed with the people of the county and we should be able to make comments before they are adopted.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

No comment

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

The people of the counties that allow this should be allowed to speak more on this subject

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Not a fan of using intern co pilots to fly into dangerous storms with no experience

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

No comment

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Let the people of the counties vote to see if they want weather modification anymore

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

It should be voted on by the people of the counties at the poles every 4 years

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

It should be voted on by the people of the counties at the poles every 4 years

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11. A Weather Modification Authority may be set up through a public vote or petition as detailed in N.D.C.C. ch. 61-04.1. The full process can be found here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-23>

Is this process sufficient? Do you have suggestions on improving this process?

There should be a public vote by the people of the counties every 4 years. Renewing every 10 years without the voice of the people of the counties is unfair and unconstitutional.

12. What are the perceived impacts of this program in your area?

Every year we have less and less rain and the storm impacts are becoming greater. I was hailed out last year 90%. This program does not work in my opinion. Let mother nature be mother nature.

13. Do you have any comments on the NDCMP?

The program does not work. If it worked so well why are there only 4 counties left in the state that allow it. The only reason it is allowed is because you don't let us vote on it except for Bowman county who did. I hope to see if shut down in the remaining 3 counties in northwest ND and never to return again. The hail impacts I received last year was the end of the line for me. Only getting to combine 20% of your hailed out crop hurts when you claim hail suppression works. We also do not get a rate reduction in hail insurance for weather modification. In fact my insurance provider he gets more hail claims in the counties with weather modification than without every year. We will see what happens at the ballot this year. I see it shut down in all counties except for Bowman.

14. Name *

Brandon Garaas

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Williams
- I do not live in North Dakota

16. Contact phone number or email

701-770-4027

View results

Respondent
5 Anonymous

12:05
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

This is not sufficient, each county involved should have an elected official for representation.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

In my opinion a "board" should not be able to mess with Mother Nature

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

No

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

No

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

I believe this is a great training exercise for students, however cloud seeding should not be done.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

No

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

I would like to see the weather modification program end in McKenzie county

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

No

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

- NDCMP Webpage: <https://www.dwr.nd.gov/arb/ndcmp/>
- North Dakota Cloud Seeding Questions and Answers: https://www.dwr.nd.gov/arb/ndcmp/pdfs/q_a.pdf

11. A Weather Modification Authority may be set up through a public vote or petition as detailed in N.D.C.C. ch. 61-04.1. The full process can be found here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-23>

Is this process sufficient? Do you have suggestions on improving this process?

No

12. What are the perceived impacts of this program in your area?

It seems that as a thunderstorm is building in Easter Montana , there are many times after the weather modification planes fly we get little to no moisture. I can't prove anything one way or the other. I'd like Mother Nature to be left alone.

13. Do you have any comments on the NDCMP?

No

14. Name *

Lee Geiger

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

Gcowboy81@yahoo.com

View results

Respondent
6 Anonymous

10:18
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

You needed agriculture people in involved

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

You need the approvealof the residents of each county... by vote

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

Wasted money

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

You need public input

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

These pilots are not certified to apply chemicals in the sky

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Your radars don't overlap

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

This has gone on long enough that the data that was requested should be sufficient...we need to stop and see what the results are without it

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

It need to be put out of service

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

When the suppress hail. They make it smaller and jagged..and more violent

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

- NDCMP Webpage: <https://www.dwr.nd.gov/arb/ndcmp/>
- North Dakota Cloud Seeding Questions and Answers: https://www.dwr.nd.gov/arb/ndcmp/pdfs/q_a.pdf

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Is this process sufficient? Do you have suggestions on improving this process?

12. What are the perceived impacts of this program in your area?

13. Do you have any comments on the NDCMP?

14. Name *

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Williams
- I do not live in North Dakota

16. Contact phone number or email

stangelandfarmdranch@yahoo.com

View results

Respondent
7 Anonymous

05:50
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

No it should be a vote from the residents

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

Yes we dont want poison in our air remove them all put it on the ballot

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

Stop doing it and save a bunch it dont help us at all in mckenzie county they have killed a toddler already from a tornado they spond

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

Abolish all that cloud seed

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

We have no radar in watford city

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Just get rid of it all and stop seeding our clouds

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

It needs to stop all together it dont work in mckenzie county all u are doing is poisoning everything and it needs to stop

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

What chemicals are in it

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

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Is this process sufficient? Do you have suggestions on improving this process?

Stop doing it

12. What are the perceived impacts of this program in your area?

Causing drought and poisoning everything

13. Do you have any comments on the NDCMP?

Stop cloud seeding

14. Name *

Tom cheney

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
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- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

View results

Respondent
8 Anonymous

09:11
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

I think its a waste of time and money to continue this program

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

I think this program is a waste of time energy and money

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

I think this entire program is a waste of time and money

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

I think this entire program is unnecessary and a waste of money time and energy

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

The partnership of incoming pilots is great. To cloud seed is a waste of time and energy and money

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Waste of time and money

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

End this program it's a waste of time and energy. Let it rain already.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

Do not renew this program

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

Do not renew this program

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

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- North Dakota Cloud Seeding Questions and Answers: https://www.dwr.nd.gov/arb/ndcmp/pdfs/q_a.pdf

11. A Weather Modification Authority may be set up through a public vote or petition as detailed in N.D.C.C. ch. 61-04.1. The full process can be found here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-23>

Is this process sufficient? Do you have suggestions on improving this process?

Every county should be voting in their county

12. What are the perceived impacts of this program in your area?

No rain ever

13. Do you have any comments on the NDCMP?

This program is designed to interfere with nature. It's a waste if money and energy

14. Name *

Karie

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Williams
- I do not live in North Dakota

16. Contact phone number or email

View results

Respondent
9 Anonymous

22:08
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

No
A different selection other than appointed by the North Dakota Governor.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

The board has too much power without input from the population of the North Dakota.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

Is it true the ARB and weather modification authority are using inter (meaning a pilot just learning to fly).
Is it possible to remove the weather modification program for good in North Dakota?

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

You need to let the population of North Dakota decide on the weather modification program.

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Yes
Why UND ?

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

What about all the devices that are not "cell phone " tower, who owns them?

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

The weather modification program should be removed from North Dakota.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

North Dakota does not need weather modification programs .

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

Stop the delusional thinking of weather modification programs are good.
They are detrimental to the health of eco systems, flora and fauna and every individual it comes in contact with.

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

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Is this process sufficient? Do you have suggestions on improving this process?

The weather modification program should be voted upon. With hand written, hand counting and complete transparency.

12. What are the perceived impacts of this program in your area?

Droughts.

13. Do you have any comments on the NDCMP?

It needs to stop the weather modification cloud seeding program.

14. Name *

Rose

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

haburnr@gmail.com

View results

Respondent
10 Anonymous

06:16
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Get rid of this all together

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

Abolish North Dakota Atmospheric Resource Board and North Dakota Weather Modification Association

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

Yah we don't want your weather mod. Put the money into schools.

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

We don't need North Dakota Atmospheric Resource Board and North Dakota Weather Modification Association. Stop this

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Stop cloud seeding.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

No

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Get rid of weather mod and cloud seeding. Stop spraying us with chemicals. Your making us sick and killing our food and soil.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

Get rid of it

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

Get rid of it

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Is this process sufficient? Do you have suggestions on improving this process?

Iya get rid of it

12. What are the perceived impacts of this program in your area?

Making people sick. Killing our soil. Killing the earth leave it be.

13. Do you have any comments on the NDCMP?

Leave

14. Name *

Na

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

View results

Respondent
11 Anonymous

42:59
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

No one serves on any commission should be on this board, and there is no one not holding some try of position or ex position in the county on this board. Also, anyone affiliated with flying the airplanes and disbursing should be affiliated.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

I see nothing about why government agencies have stopped doing this, just why we should. They neglect in their duties with full disclosure.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

If the state approves this why isn't it all over the state and the state paying for it? Why just a few counties trying to hold onto an outdated method? The east side if the state gets it the worst in the summer. Why do they strongly say they will not do this?

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

Their decisions are not fact based and biased. They are neglectful in full disclosure as well as their inability to look at why other counties and states have stopped this method. They do not represent our state, county or general concern or do they hear what citizens are trying to communicate.

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Teach them to be EMS pilots, they are in greater need in this area. That's a very small number over 50 years? If it's so great of a program, why so little trained?

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

We are behind the nation with our system. I would rather my money going towards a more efficient radar system than pouring chemicals on citizens.

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Be transparent. Before your decisions are made. Be honest avoid the problems it causes instead of what you conceive as appropriate and food for the citizens of not only this county but this state. We do still have a voice. Sitting on this board does not give you the right to ignore not only us but 95 percent of these programs that were shut down because they are ineffective.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

Why do the counties they cloud seed do not know this?

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

Are they regulated? No. Because scientific data directly contradicts their data. It's like buying herbal medicine to cure an infection, the data doesn't back it up

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

- NDCMP Webpage: <https://www.dwr.nd.gov/arb/ndcmp/>
- North Dakota Cloud Seeding Questions and Answers: https://www.dwr.nd.gov/arb/ndcmp/pdfs/q_a.pdf

11. A Weather Modification Authority may be set up through a public vote or petition as detailed in N.D.C.C. ch. 61-04.1. The full process can be found here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-23>

Is this process sufficient? Do you have suggestions on improving this process?

No. Publishing in newspapers is out of date. And the only thing the public can vote on, and only after a petition, is to end it. Why are we not allowed to vote members in or out? They have very little to do with the public really.

12. What are the perceived impacts of this program in your area?

Modified weather patterns that alter mother nature. Citizens are involuntary subjected to chemicals we have not been informed entirely about. When looking at the radar and seeing rain around you doesn't alarm this board by how they are stopping that, they should not be on a board deciding what's good for their citizens.

13. Do you have any comments on the NDCMP?

It should be shut down and resources used elsewhere. Even though this program is in place, the amount of claims from farmers for crops ruined from insects, disease, and drought far outnumber the statistics on hail damaged crops. It's absolutely unnecessary.

14. Name *

Lisa

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Williams
- I do not live in North Dakota

16. Contact phone number or email

View results

Respondent
12 Anonymous

19:25
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Please stop and disband this weather modification program.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

The powers of the board are controlled by the county because they are all employees of the County. (Lyndsey Harriman)

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

Stop using taxpayer money to line the pockets of weather modification airplane owners and making our insurance premiums increase because of bigger hail and stronger winds.

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

The role is a farse and needs to be obliterated.

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

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- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

407 students received paid flying time to further their ambitionson TAXPAYER MONEY !!!

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

The Williston radar should be tied to the National Weather Service.
Glasgow and Deering radar can't 'see' under 15,000 feet here in williston.
But this radar was paid with 'public safety' tax .
Williston needs a radar but should be put in Watford City (Canada doesn't need coverage and Medora does)

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

End all partnerships, disband the board, put the money back into the General fund, and probably forget this boondoggle, brain fart called Weather modification.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

Stop the service immediately! Why fight it ? Stop and wait for the 'pop'

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

Stop the Service ! Service...that's funny

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

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Is this process sufficient? Do you have suggestions on improving this process?

When a Commission makes a board for programs like this, why the hell can't they just stop it !!! Disban. Stop. Go home.

12. What are the perceived impacts of this program in your area?

We have bigger hail, stronger storms, and LESS RAIN !!!
PROGRAM FAILURE !!

13. Do you have any comments on the NDCMP?

SHUT IT DOWN

14. Name *

Matt Vannatta

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
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- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Williams
- I do not live in North Dakota

16. Contact phone number or email

7015724512

View results

Respondent
13 Anonymous

07:47
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Keep it going.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

Helps with hail

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

No

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

No

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Think it's a good thing.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Need to keep them.

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

No

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

No

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

No

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

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11. A Weather Modification Authority may be set up through a public vote or petition as detailed in N.D.C.C. ch. 61-04.1. The full process can be found here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-23>

Is this process sufficient? Do you have suggestions on improving this process?

Keep it going.

12. What are the perceived impacts of this program in your area?

On the MT , ND boarder used to be able to go 10 miles into MT ,we have had so much hail since they can't seed before it gets to us.

13. Do you have any comments on the NDCMP?

14. Name *

Kevin Riedel

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
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- Hettinger
- Kidder
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- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

406 480 0428

View results

Respondent
14 Anonymous

276:59
Time to complete

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Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

More reps from county's not in program but affected by the program

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

No

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

County's involved should pay all costs

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

There are better ways to spend taxpayer money

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

No

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Radars are a plus

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

No

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

No

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

No

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

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- North Dakota Cloud Seeding Questions and Answers: https://www.dwr.nd.gov/arb/ndcmp/pdfs/q_a.pdf

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Is this process sufficient? Do you have suggestions on improving this process?

Should be by vote only

12. What are the perceived impacts of this program in your area?

Need to leave Mother Nature alone less rainfall in my area

13. Do you have any comments on the NDCMP?

Same as above

14. Name *

Mike h sonsalla

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

1 406 891 0162

View results

Respondent
15 Anonymous

19:58
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

I would like to see members voted in, rather than being appointed. Western North Dakota is not well represented.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

Things that affect all of us should be brought to a vote! The weather modification of our entire state should not be decided by a handful of people!!

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

I think this an entire waste of taxpayer money.

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

Again, weather modification affects us all. A handful of people should not have this kind of power. And if it must be so, every part of the state needs to be represented in order to be fair to us all.

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Yes, I do. Cloud seeding should be banned. There should be no need to train, because this (cloud seeding) is a serious health risk to us all. Our air, our land, our food is all being poisoned by these chemicals.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

I appreciate the radar coverage.

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

I recommend that all cloud seeding and geo engineering be stopped immediately in our beautiful state. I believe this is harming our state, as well as every living being.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

I strongly urge this program to be discontinued.

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

This is harming all of us! Why would you continue it? No amount of money is worth damaging the health of the land, the animals and the people.

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

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Is this process sufficient? Do you have suggestions on improving this process?

The process to bring this to the voters is a fair one.

12. What are the perceived impacts of this program in your area?

This program breaks up the clouds so the rain passes us by. It poisons the land, the water, the animals, the birds, the insects, our food, and all of the people. It must stop happening. Don't you wonder why our area has such a high rate of cancer? What if what is being sprayed all over us, is causing cancer?? It's certainly worth considering. I know money is a big part of this push. But when do we say enough?? I would hope that time might be now.

13. Do you have any comments on the NDCMP?

I appreciate the opportunity to share our opinions. I would like to see all weather modification programs ended.

14. Name *

Mary Dennis

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

Mldennis3@gmail.com

View results

Respondent
16 Anonymous

04:59
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

yes, No

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

no

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

No

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

DWR Does a good job

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Sounds like a good idea

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

If possible, expand too statewide

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

No

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

I've seen the facility, looks more than adequate

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

- NDCMP Webpage: <https://www.dwr.nd.gov/arb/ndcmp/>
- North Dakota Cloud Seeding Questions and Answers: https://www.dwr.nd.gov/arb/ndcmp/pdfs/q_a.pdf

11. A Weather Modification Authority may be set up through a public vote or petition as detailed in N.D.C.C. ch. 61-04.1. The full process can be found here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-23>

Is this process sufficient? Do you have suggestions on improving this process?

12. What are the perceived impacts of this program in your area?

13. Do you have any comments on the NDCMP?

14. Name *

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
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- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

701-368-2817

View results

Respondent
17 Anonymous

20:36
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Yes

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

No comments

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

No. Would say that if you currently do not have a line item or initiative for public outreach and public education, you need to. 'Weather' :) that is contracting the NDSU Extension or creating an internal initiative, locally, radical individuals who do not understand the science nor the historical actuarial data, are owning the local narratives. I am from McKenzie County and McKenzie County residents need to be educated on the topic and the historical data that drove to implementation both in western North Dakota and in other areas of North America.

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

No

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

No

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

No

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Per my notes / comments above on outreach partnerships and the need for outreach and education.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

No

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

No

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

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- North Dakota Cloud Seeding Questions and Answers: https://www.dwr.nd.gov/arb/ndcmp/pdfs/q_a.pdf

11. A Weather Modification Authority may be set up through a public vote or petition as detailed in N.D.C.C. ch. 61-04.1. The full process can be found here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-23>

Is this process sufficient? Do you have suggestions on improving this process?

No. See notes on outreach and public education. The outreach should include county by county actuarial tables for North Dakota. We lived north of Bismarck for several years and received substantial hail damage to property. When we moved to McKenzie County, premiums went down substantially. People don't understand the consequences of living in a county that does or does not participate. Outreach should be focused around that and the public/private ROI of the investment. The typical person opposed to WM doesn't understand how it impact them and if they aren't a farmer purchasing multi-parallel or they don't have aspirations of becoming a pilot through UND with a summer internship in the program, they don't see the benefit to them. Clearly there are benefits, they will only be realized through outreach and education.

12. What are the perceived impacts of this program in your area?

There is a growing anti-movement. There is a person who has been closely associated with the Becker Backers Bastians who placed petitions (within the last month) at several local businesses including Farmers Union of Watford City and posted on our Watford City Whatz Up community FB page to go in and sign the petition 'to demand the McKenzie County commission' to defund WM. Don't think your program is safe. The petition is no longer there, but it is/was also in several private businesses in town that aren't member coops and they are possibly still in those businesses.

13. Do you have any comments on the NDCMP?

Already shared - get engaged with data driven outreach.

14. Name *

Vawrita Best

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
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- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

701 580-1862

View results

Respondent
18 Anonymous

36:15
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Agriculture needs to be involved.
Check with some of the commodity groups for representatives.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

They need to be more restrictive.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

If something is not cost effective, the government should not have to subsidize it with tax dollars!

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

Needs to be monitored closer because of climate change.

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

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- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Good way for students to get more flight time.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Support NDawn.

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Reduce the cost share.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

No comment

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

No comment

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Is this process sufficient? Do you have suggestions on improving this process?

Yes

12. What are the perceived impacts of this program in your area?

None

13. Do you have any comments on the NDCMP?

No comment

14. Name *

Casey Voigt

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
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- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

(701)870-0771

View results

Respondent
19 Anonymous

40:35
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

No, they are first hand picked by the weather boards or other cloud seeding nut cases and later shoved down the governors through cause first of he don't have a clue what you're all about, and second of all you were not a part of his agenda given your tiny little foot print of people that still believe you're good for something

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

Your little boards work in secrecy and don't give a red cent of care for anyone's input
They are 100% shielded from any real scrutiny and covered up from the public eye

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

After over 75% of the state has rejected cloud seeding in their own counties by never letting you seed their clouds or having you and chasing you out. With recently Ward county throwing the middle finger at you with a 10-1 get out of here vote showing 9 out of ten for sure do not want their hard earned money handed out to this "project" or in other words never ending experiment
No you do not deserve to be redistributing our money for your "project"

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

The department of water resources nor the water commission do anything to watch over you, they have real games to play
And your quasi this and that just does whatever it wants with no oversight and is totally protected from all of its corrupt and negligent doings

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

This is all a scam to keep legislative voting power in an area unaffected by this debauchery and sounds good to the people making your payroll

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Yeah, um, why are other neighboring counties funding it if the state pays for 34% of the cloud seeding? Couldn't we just lobby for NOAA to put up another radar? You do have lobbyists you pay for to protect yourselves anyhow. Lance could have got this done years ago.....

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Retire them all

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

Was or is WMI involved or affiliates with cloud seeding in the UAE when Dubai flooded?
If not we should obviously be hiring them for cloud seeding cause at least once they were actually able to make it rain.....

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

Consider who's flares make have been used in Dubai when it flooded because the flares here only seem to induce large amounts of hail

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

- NDCMP Webpage: <https://www.dwr.nd.gov/arb/ndcmp/>
- North Dakota Cloud Seeding Questions and Answers: https://www.dwr.nd.gov/arb/ndcmp/pdfs/q_a.pdf

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Is this process sufficient? Do you have suggestions on improving this process?

No, far from it, maybe if the ARB and other cloud seeding favoritism wasn't involved

12. What are the perceived impacts of this program in your area?

Increased hail
Decreased rain
Higher hail insurance premiums
Inaccurate weather forecasts during June, July and August.
Higher temperatures caused by less rain and cloud cover

13. Do you have any comments on the NDCMP?

Haha, yeah, you don't care about the publics input at all and will stop at nothing to continue this program no matter what the voice of the people that have not been brain washed.

14. Name *

Jamie Kouba

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
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- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

1-701-209-0155

View results

Respondent
20 Anonymous

22:01
Time to complete

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Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

I think the board is covered by special interests groups rather than the concerned North Dakotian that can see the damage this is causing.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

This should be an open vote on all aspects that affect the all North Dakota residents.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

This should not be funded using any tax payer money that did not get to vote this out. You have skipped the vote on this for multiple years and should be mandatory each year for county residents. I think mother has done a darn good job of taking care of the earth without you polluting it.

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

The power needs to be brought back to the citizens of the county and state. You take illegal funds to keep this running for your individual gains.

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
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- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Again I would say these are illegal partnerships because the citizens do not get to voice our opinions in any form.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Early warning is need but lay you flight plans over with the chronic waste and blue tongue and any idiot can see the damage. Save nothing for your grand or great grand children you see.

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

This should be dissolved. Any and all participants should get investigated and any abnormal income issues should be brought to the public.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

Should be stopped.

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

For my families sake this should be stopped. It hazardous chemicals.

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Information related to NDCMP can be found at the following links:

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Is this process sufficient? Do you have suggestions on improving this process?

It should be mandatory vote each election cycle. The reason it is not is because it would be voted out.

12. What are the perceived impacts of this program in your area?

Environmental impact on animals and crops.

13. Do you have any comments on the NDCMP?

Stop all chemical spraying.

14. Name *

Jeff Ralph

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Williams
- I do not live in North Dakota

16. Contact phone number or email

701.570.5610

View results

Respondent
21 Anonymous

22:45
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

I feel it is not the duty of government to try & manipulate the weather.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

Put these tax dollars back into the hands of the states residents.
Not matter the amount, government cost cutting has to start somewhere.

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

Manage the water resources that we have that are here naturally.

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

This program does not need the reason to exist in order to train pilots.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Funding the locations for radar is fine & serves a purpose of information.
If you are saying that these would not exist without messing with nature should not be a leverage tool.
Many of us found a need for NDAWN stations that the state would not or could not fund.
Today, most stations are privately funded.

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Please get out of the business of manipulating the weather.
Your results are not convincing that it is good for the environment, hail claims for agriculture or urban areas.
Ward county has shown that.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

I hope this is not an insider money exchange of who knows who.

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

See answer #9

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

- NDCMP Webpage: <https://www.dwr.nd.gov/arb/ndcmp/>
- North Dakota Cloud Seeding Questions and Answers: https://www.dwr.nd.gov/arb/ndcmp/pdfs/q_a.pdf

11. A Weather Modification Authority may be set up through a public vote or petition as detailed in N.D.C.C. ch. 61-04.1. The full process can be found here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-23>

Is this process sufficient? Do you have suggestions on improving this process?

At least the population of a county has a chance to end a program without politicians giving it to you without you wanting it.
I do wish it had to be voted in not only voted out after potentially influenced county commissions are persuaded to start it up.

12. What are the perceived impacts of this program in your area?

It does not work.
Now that we all have phones & radar in our hands, too many times a weather system will be coming our way. Most times non severe but if the system has any orange to it, the planes shoot it down.
In my eyes this is a rain ending venture not an enhancement program.
As a farmer in McHenry & Ward county, thank God the program was ended for Ward co.
We have received more consistent rain in my opinion since the cloud seeding ended.

13. Do you have any comments on the NDCMP?

You are messing with Mother Nature.
It is not your place.

14. Name *

Joel Newman

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
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- Pierce
- Ramsey

- Ransom
- Renville
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- Rolette
- Sargent
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- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

jd68@hotmail.com

View results

Respondent
22 Anonymous

71:16
Time to complete

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Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

I do not.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

I think the ARB should be under the direct supervision of someone other than the Department of Water Resources. I feel that the board doesn't answer to anyone else other than who is in their own 'interest'.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

I do not.

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

I just have to say, as a resident of Mountrail County, I find the timing of the listening meeting incredibly disappointing. Why the Friday before Memorial Day, the day before planting deadlines, etc.? We had hardly anyone in attendance. I also find zero faith in what is said about caring about the public's opinions, well-being, etc. To my knowledge, there have been no other public meetings regarding this issue. And it's been a very long standing issue. We had the opportunity to have the public's voices heard every 4 years on weather modification with HB1166 but that was fought against. It feels like the board only wanted to have this 'listening meeting' to save face and make it look like they care and to try to hang on to the last threads of what is remaining of this program. I don't feel this is the proper avenue for me to voice my remaining concerns. I am incredibly disappointed and look forward to finally having the public's voices heard in Mountrail County in November.

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

I do not.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

I do not.

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

I do not.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

I do not.

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

I do not.

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

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Is this process sufficient? Do you have suggestions on improving this process?

I do not.

12. What are the perceived impacts of this program in your area?

*Our tax dollars would be better spent elsewhere. A place where we can SEE and actually measure the effects rather than relying on hypotheticals and studies that have no control included.
*Why do other counties not participating in the program report fewer crop losses than we do?
*Western North Dakota is not wetter overall. If you attempt to reduce hail by 40%, you also reduce rain by 30%.

13. Do you have any comments on the NDCMP?

If the program was doing what its proponents claim, we'd all support it. Why are counties leaving the program and not coming back to it? I feel that speaks volumes to what the people (not governmental agencies) think. I also understand that the project takes into account precip. for the YEAR. Not just for the months the program is conducted. I find that to be incredibly misleading to us all. I feel so much could be said about how this isn't a fit for our county (and state). I, again, look forward to voting on this program in November.

14. Name *

Amy Dennis

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
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- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

amy_schlag7@hotmail.com

View results

Respondent
23 Anonymous

23:42
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

No. They should be voted in. Not appointed by the governor.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

The board has too much power over what affects everyone individually.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

270k spent to control mother nature over the summer months. Sad. It could be used elsewhere. We have had a nice amount of rain in May. Now watch, this 270k spent will cause VERY LITTLE rain for June-August.

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

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6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

With new technology it's time to end this partnership. It is now 2024.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

I am fine with Radar. As it's nice to be prepared for upcoming weather.

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

Please do not renew. It's time to end. I do not approve for silver iodine to be administered into the clouds anymore. I am ready to let mother nature give us what she has.

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

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Is this process sufficient? Do you have suggestions on improving this process?

Should be a vote

12. What are the perceived impacts of this program in your area?

Little to no rain. Pasture lands dry and cows eat up what grass there is in no time at all. Sloughs are dry by July. Grass and gardens don't produce as nicely without rain water. Crops are ok because of the rain we receive in the spring. The weather mod board has the authority to ground the planes when they see fit. So if they think the crops need some rain, they will be grounded.

13. Do you have any comments on the NDCMP?

14. Name *

Camie Anderson

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
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- Oliver
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- Ransom
- Renville
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- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

andersoncamie@hotmail.com

View results

Respondent
24 Anonymous

08:52
Time to complete

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Do you have any comments regarding the powers and duties of the Board?

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

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6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

It is my understanding that Montana and South Dakota already pay for part of the cost

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

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Is this process sufficient? Do you have suggestions on improving this process?

They were voted out of Slope county seedling should not take place

12. What are the perceived impacts of this program in your area?

They make it dryer

13. Do you have any comments on the NDCMP?

This program should go away

14. Name *

Dan Flor

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
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- Foster
- Golden Valley
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- Hettinger
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- Logan
- McHenry
- McIntosh
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- Ransom
- Renville
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- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

fior@ndsupernet.com

View results

Respondent
25 Anonymous

23:36
Time to complete

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Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Why are other counties are not represented by the Atmospheric Resource Board? The drifting of cloud seeding is going to affect areas exceeding the countries represented.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

Most people in this state have no idea that this entity exists, to modify the climate, yet we are being gas lit every day with "climate Change." The Weather Modification Authority has been operating under the radar and should have to advertise when and where it is going to modify the climate.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

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- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Why hasn't this been more open to the publics awareness? News etc.? Seems suspicious.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

I do not want particles drifting near any of my family. No cloud seeding, no Che trails etc. we see them nearly every day!

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

I will be making more and more people aware of this program.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

Yes, please stop modifying our weather/climate. No more chemtrails!

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

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Is this process sufficient? Do you have suggestions on improving this process?

This may not be the appropriate spot for this comment, but how many board members are employees of the state? Would employees of the state have a conflict of interest in the use of this program? I would think so. I do not believe the majority of the public is aware of this program.

12. What are the perceived impacts of this program in your area?

The public is not made aware of the iodized particles that are used to cloud seed, that may drift and come in contact with them. My perception is that this program does more harm than good. Changing weather patterns/climate can only create more havoc on our atmosphere than good.

13. Do you have any comments on the NDCMP?

14. Name *

Bonnie Volk

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

7012212323

View results

Respondent
26 Anonymous

44:02
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

Asking you to review and to actually propose legislation to ban any type of weather modification. The two main materials used in cloud seeding are Silver Iodide and Potassium Iodide. Silver iodide regulated under the Clean Water Act as a hazardous substance. It is an acute irritant effecting things like eyes, skin, mucous membranes, gastrointestinal health, kidneys, and brain. Potassium iodide according to the CDC website can have harmful health effects like gastrointestinal upset, inflammation of glands, rashes, and can cause allergic reactions. The following seven states have proposed bills to ban weather modifications being done in their state: Rhode Island (The Clean Air Preservation Act), New Hampshire (The Clean Atmosphere Preservation), Illinois (Weather Modification Act), South Dakota (Senate Bill 215), Connecticut (Senate Bill 302), and Tennessee (House Bill 2063 & Senate Bill 2691). I hope you will follow suit and propose legislation to stop spraying chemicals in our air that we breathe and to keep the future of our state healthy.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

There should be tests done on water quality, air quality, soil quality, vegetation quality and the impact that weather modification has on all of our natural resources. Also, how weather modification can affect air travel.

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

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- North Dakota Cloud Seeding Questions and Answers: https://www.dwr.nd.gov/arb/ndcmp/pdfs/q_a.pdf

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Is this process sufficient? Do you have suggestions on improving this process?

Truly many do not know this type of weather modification is even happening.

12. What are the perceived impacts of this program in your area?

The morning can be blue skies and then one sees the airplane spraying and then clouds cover the sky. Also, once when flying and looking out the window at the clouds I noticed how some clouds looked like they were made out of dirt. I wondered if they were the clouds that were seeded. I also would like to ask if weather modification causes more wind.

13. Do you have any comments on the NDCMP?

Please. please have an impact on ND and have any type of weather modifications stopped. I ask this especially for the future of our kids and grandkids.

14. Name *

Barbara Thorson

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
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- LaMoure
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- McHenry
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- Ransom
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- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

barbara_thorson@hotmail.com

View results

Respondent
27 Anonymous

09:27
Time to complete

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Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

yes

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

no

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

no

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

no

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Great program for intern pilots to gain experience.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Radar coverage helps with storm preparedness

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Rain enhancement and hail suppression is a good program

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

No

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

No

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

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Is this process sufficient? Do you have suggestions on improving this process?

Sufficient

12. What are the perceived impacts of this program in your area?

Rain enhancement and hail suppression

13. Do you have any comments on the NDCMP?

14. Name *

Alex Johnson

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
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- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

View results

Respondent
28 Anonymous

10:46
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

No, more representatives from smaller areas, voted on by the people.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

It is pointless as there is one company

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

End it.

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

They appear to be the same

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

The partnership is fine, the seeding is not

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Why was the Stanley radar down for an extended period of time and when I emailed about it I was told it was up, yet the site said it was down? It appears like a good idea, yet very unorganized behind the scenes.

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Build more radars

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

It appears we have 0 choice in it. They are the only ones.

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

What is their relationship with WMI?

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

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- North Dakota Cloud Seeding Questions and Answers: https://www.dwr.nd.gov/arb/ndcmp/pdfs/q_a.pdf

11. A Weather Modification Authority may be set up through a public vote or petition as detailed in N.D.C.C. ch. 61-04.1. The full process can be found here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-23>

Is this process sufficient? Do you have suggestions on improving this process?

It should be put to a vote every two years on whether or not to continue, stop, or start the program.

12. What are the perceived impacts of this program in your area?

We follow the Stanley radar that shows the seeding, along with flight radar 24, and every single time you seed a storm ahead of us, we get little to no precipitation, regardless of storm size or intensity. If we get anything, we get copious amounts of hail with no rain and then have failed crops.

13. Do you have any comments on the NDCMP?

It should be voted on every election and the public meetings are purposely obfuscated in both location, time, date, and notification.

14. Name *

Jacob Grieger

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

Jacob.Grieger@Outlook.com

View results

Respondent
29 Anonymous

06:01
Time to complete

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Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

No, fill the open position.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

Stop the program and save money!! We don't need cloud seeding!! It is poisoning our soil!!

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

Stop it. Easte of taxes payers money!

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Stop cloud seeding!!

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Stop cloud seeding and we won't have to waste money!

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Shut it down!!

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

Shut it down!

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

Stop it!!

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

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Is this process sufficient? Do you have suggestions on improving this process?

No

12. What are the perceived impacts of this program in your area?

Bad!! Cloud seeding if poisoning our soil air!!

13. Do you have any comments on the NDCMP?

Stop this nonsense and waste if taxes payers money!! You guys aren't preventing nothing and are making storms worse!! Stop the program!!

14. Name *

Gregory Fee

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

View results

Respondent
30 Anonymous

50:37
Time to complete

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Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
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6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

I would like to end cloud seeding all together. Most other states and counties have ended this without any negative results, and I do not like that you are modifying storms and weather. I would rather a slight increase in the chance of hail, if it means we also have a better chance of getting rain. There are countless times in the summer that we see a good storm and rain coming our way, then we hear the planes flying up there and it dissipates before it gets to us.

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

We should stop all weather modification and let storms form and dissipate naturally.

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

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Is this process sufficient? Do you have suggestions on improving this process?

12. What are the perceived impacts of this program in your area?

I perceive this as a negative impact. I have seen storms dissipate countless times when it looks like we are going to get a good rain on the crops. I believe this is causing a reduction in rainfall yearly, and would like to see it stop.

13. Do you have any comments on the NDCMP?

Please stop weather modification, Nature was created this way for a reason, and you don't know what problems you are causing by modifying it.

14. Name *

Joel Dennis

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
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- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

joel.dennis@mac.com

View results

Respondent
31 Anonymously

63:07
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

No. It's my opinion that we don't need a board at all & that there should not be any weather modification programs.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

It seems to me that the board has too much power.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

I think it's ridiculous that the state and nation are putting any resources into weather modification programs.

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

I question all of this. I would like to know where one can find public information about any weather modification contracts and operations and exactly how any and all are decided upon.

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Again, it's my opinion that weather modification programs and cloud seeding are unnecessary and more harmful than helpful.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

If the information coming from this radar center is used specifically for weather modification programs, I do not approve.

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

I strongly encourage all weather modification to be stopped and these government partnerships to be dissolved. No program. No board. Stop messing with weather patterns!

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

Stop all cloud seeding operations and weather modification programs!

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

Stop all cloud seeding operations and weather modification programs!

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

- NDCMP Webpage: <https://www.dwr.nd.gov/arb/ndcmp/>
- North Dakota Cloud Seeding Questions and Answers: https://www.dwr.nd.gov/arb/ndcmp/pdfs/q_a.pdf

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Is this process sufficient? Do you have suggestions on improving this process?

No weather modification authority or board is necessary because the whole program is unnecessary.

12. What are the perceived impacts of this program in your area?

It's really difficult to determine that. I don't believe that weather modification programs are contributing to the welfare of the planet or the majority of people.

13. Do you have any comments on the NDCMP?

I think this agency runs under the radar of most people and there isn't any clearly presented data available to the public on specific weather modification operations or long-term studies in weather & climate impact. It's my opinion that the agency is completely unnecessary, like most government agencies.

14. Name *

Jessica Fred

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
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- Ransom
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- Richland
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- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

View results

Respondent
32 Anonymous

04:45
Time to complete

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Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Stop messing with the weather.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

Stop messing with the weather.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

Stop messing with the weather.

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

Stop messing with the weather.

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Stop messing with the weather.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Stop messing with the weather.

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Stop messing with the weather.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

Stop messing with the weather.

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

Stop messing with the weather.

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

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Is this process sufficient? Do you have suggestions on improving this process?

Stop messing with the weather.

12. What are the perceived impacts of this program in your area?

We have had a lot less rain and a lot more water bill to try to grow food for our family. Stop messing with what God put in place for the love of all things holy.

13. Do you have any comments on the NDCMP?

Stop messing with the weather. Was this even voted on for all of us being affected by you stopping rain when we need it?

14. Name *

Sheila Cockerham

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
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- Mountrail
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- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

7015803378

View results

Respondent
33 Anonymous

03:16
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Stop messing with the weather!

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

Stop messing with the weather! It's called insurance...

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

Stop messing with the weather!!

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

Stop messing with the weather!!

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

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- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Stop messing with the weather and cloud seeding!

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Stop messing with the weather and cloud seeding

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Stop messing with the weather and cloud seeding

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

Stop messing with the weather and cloud seeding

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

Stop messing with the weather and cloud seeding

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Is this process sufficient? Do you have suggestions on improving this process?

Stop messing with the weather and cloud seeding

12. What are the perceived impacts of this program in your area?

Stop messing with the weather and cloud seeding.

13. Do you have any comments on the NDCMP?

Stop messing with the weather and cloud seeding

14. Name *

Siana Bock

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
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- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

Sianabock@gmail.com

View results

Respondent
34 Anonymous

06:21
Time to complete

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Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Local farmer and a rancher should be on the board too

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

We should leave our weather alone - don't play God

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

This affects all of us - leave Mother Nature alone

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

Stop weather modification

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

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- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Stop weather modification

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Stop weather modification

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Stop weather modification

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

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Information related to NDCMP can be found at the following links:

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Is this process sufficient? Do you have suggestions on improving this process?

Stop weather modification

12. What are the perceived impacts of this program in your area?

Stop weather modification

13. Do you have any comments on the NDCMP?

No

14. Name *

Lori

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
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- McLean
- Mercer
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- Ransom
- Renville
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- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

701-721-2801

View results

Respondent
35 Anonymous

07:07
Time to complete

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Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Yes

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

No

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

No

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

No

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

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- Williston Radar
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- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

It's a good may for young pilots to get flight hours and some great experience

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

The radar is a great thing for our community

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

No

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

No

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

No

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Is this process sufficient? Do you have suggestions on improving this process?

Yes

12. What are the perceived impacts of this program in your area?

Mostly good Bowman county took it to a vote and it won easily

13. Do you have any comments on the NDCMP?

No

14. Name *

Ryan Brewer

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
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- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

7015236548

View results

Respondent
36 Anonymous

30:34
Time to complete

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Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

Every board I have dealt with has never addressed a single concern or offered alternatives during times of drought. They repeat state propaganda and tell everyone to get a petition. They never offer to work with anyone unless it means more seeding.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

The board should not get to issue its own permit and then execute on said permit. The permit should be issued by counties and surrounding counties so that they have a say in an issue that affects them even though they not in program.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

If the return to this program is so high save the states money and let counties fund 100% themselves. We will find out just how "cheap" it is when the counties complain they can't afford to pay 100-%.

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

Control should be given to the department of ag. The dwr seems clueless as to the needs and wants of agriculture.

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

The goal of the program is not to house interns. It's to create rain. There is no reason to use this program as an intern type mechanism to get hours to people. There are numerous opportunities for pilots to get hours without jeopardizing ag in nd.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

Find radars and nothing else.

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Why do we have partnerships with a lobbying arm of weather modification? Why do we put out studies that don't even have a true control within the target area. The data on storms seeded versus not seeded is non-existent. Admit your data is all garbage.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

Hire someone else so that the relationships between wmi and the state are not conflicting.

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

Find someone else. This is a business owned by wmi. This whole program just lines wmi pockets.

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

- NDCMP Webpage: <https://www.dwr.nd.gov/arb/ndcmp/>
- North Dakota Cloud Seeding Questions and Answers: https://www.dwr.nd.gov/arb/ndcmp/pdfs/q_a.pdf

11. A Weather Modification Authority may be set up through a public vote or petition as detailed in N.D.C.C. ch. 61-04.1. The full process can be found here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-23>

Is this process sufficient? Do you have suggestions on improving this process?

The process should be made that any county in program must have a public vote every 4 years.

12. What are the perceived impacts of this program in your area?

Well since Williams joined in 2000 avg precipitation has decreased in ward county. You don't have any data that shows which storms are seeded versus non seeded. We voted this program out by a large margin yet we feel it's affects because there isn't any fence that stops what you do downwind. You need setbacks that ensure downwind counties have zero affects.

13. Do you have any comments on the NDCMP?

If your program was so great everyone would do it. This program is so massively unpopular if you had a statewide vote to ban cloud seeding you guys would lose by a minimum 2-1 margin. If you insist on continuing why not do precipitation enhancement in spring and fall only. Leave the growing season alone. Build reserves for the next year. This program started out as a precipitation program but morphed into hail suppression because there were no rain results and hail suppression sounds better. The avg summer precipitation has increased in ND over the last 30 years yet here in Ward county it is flat to down. I guarantee if you had the actual data you would find hail suppression to have decreased precip. I kept track on my own farm of rain totals from seeded versus non seeded storms and the results show non seeded storms have given us the lions share of precip going back as far as I have kept track. Your data is disingenuous at best since you don't actually track data from seeded versus non seeded storms you just lump them all together. It is a joke and if you are honest with yourselves you would admit that but you are only concerned with the program not its results. I encourage you to suspend the program for 10 years and get data to see what changes. My guess is nothing will really change and this will all be proven to be a waste of time and resources. If the program does all you claim people will be clamoring to get it back after you stop for 10 years. My gut tells me no one will and yours does too hence why you guys are always against any suspension or modification of the program. It will mess up the story you have repeated for over 30 years without any proof of actual effectiveness. It would be an admission of wrong on your part and we can't ever have any humility come from the ARB because you guys all think you know best and the rest of us are idiots. You should be ashamed but you're not and it's because you don't care about us or results you just care about your bureaucratic little pet project you can ride into retirement on. It's May 31st so tomorrow that means storms coming from the west and southwest will not reach ward county. They will be over seeded in hopes of dispersing hail that isn't a threat to most. We will always be short on rain until a storm pops up in the middle of the night you don't get to seed. Listen to my side for once so you can prove us wrong. I dare you.

14. Name *

Roger Neshem

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

7017207454

View results

Respondent
37 Anonymous

29:30
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

No. I do not feel the board has the best interest of the people or the land.

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

I do not agree with weather modification. There are no true statistics that show a benefit. There has been no information in the past 50 yrs to compare it to. No program should be spending tax dollars on programs that do not work and often have adverse effects. Where is the study on how much rain would have fallen had they not seeded clouds? And often times the local people that decide when the planes fly are no where qualified.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

It is ridiculous to spend any amount of tax dollars. Those monies should be used on roads, library's, lessen property taxes. Things every citizen would benefit from rather than no one.

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

I do not believe any board members are open to exploring an option to stop weather modification. They only want to continue the program. Without any recent data on the differences weather modification makes shouldn't we be pausing the program for 5 years or more and then compare to see if the tax dollars were well spent.

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

Partnerships are great but teaching students to fly is not the responsibility of the weather modification or atmospheric board. Halting the rainfall for entire counties of farmers and ranchers is detrimental and should be far more considered than 407 pilots over 50 years.

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

Weather modification in Mountrail, Williams, and Bowman counties needs to stop. Even if it is for 5-10 years to get a comparison on what might actually be effected. But no one is willing to pause the program. And when they are unwilling to pause something, it tends to throw red flags that perhaps they do not want to pause a program for fear they would be proven wrong and proven it is a waste of taxpayer monies.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

Needs to cease immediately. This has turned into a cash cow for a select group of people at the expense of the taxpayer, farmer and rancher.

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

Needs to cease immediately.

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

- NDCMP Webpage: <https://www.dwr.nd.gov/arb/ndcmp/>
- North Dakota Cloud Seeding Questions and Answers: https://www.dwr.nd.gov/arb/ndcmp/pdfs/q_a.pdf

11. A Weather Modification Authority may be set up through a public vote or petition as detailed in N.D.C.C. ch. 61-04.1. The full process can be found here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-23>

Is this process sufficient? Do you have suggestions on improving this process?

No. Often times people on these boards are not qualified to decide when mother nature and possible rainfall need to be seeded. If they seeded only heavy storms or detrimental storms one could argue it would be worth it, but they seed every single rain cloud. Wasting tax payer money and costing timely rains to farmers and ranchers.

12. What are the perceived impacts of this program in your area?

The impacts of these programs are negative only. If they seeded only heavy storms or detrimental storms one could argue it would be worth it, but they seed every single rain cloud. Wasting tax payer money and costing timely rains to farmers and ranchers. Watching rain clouds approaching only to hear planes fly overhead and the rain dissipate is gut wrenching. They are playing God with taxpayer money and costing areas much needed moisture. Suppressing hail is unnecessary, living in ND we all have the option of insurance and know that hail is a risky just as Florida risks hurricanes and Kansas risks tornadoes.

13. Do you have any comments on the NDCMP?

Please be open minded and at least consider pausing the weather mod project for 5 years or more. At least take that time to grab data and information to compare the past 5 years to. We do not teach students the same as 50 years ago, we do not farm and ranch the same as 50 years ago. Just because something was started in 1974, does not mean it needs to continue

14. Name *

Candice Asmundson

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

701-833-2832

View results

Respondent
38 Anonymous

32:52
Time to complete

1. By law, the Atmospheric Resource Board consists of 7 members appointed by the Governor, each representing a geographic district of the state. Additionally, there are 3 ex officio members representing the Department of Water Resources, Aeronautics Commission, and the Department of Environmental Quality. Current board representation can be found on the Board's website: <https://www.dwr.nd.gov/arb/board/>.

Do you find the make-up and representation of the Board sufficient? Do you have any suggestions of alternatives?

yes, it appears to represent all areas of the state and the agencies necessary

2. The powers and duties of the Board are discussed in N.D.C.C. § 61-04.1-08 and include, among others, the duty to adopt all rules regarding qualifications and conditions for issuance of weather modification licenses and permits. The full text can be read here: <https://ndlegis.gov/cencode/t61c04-1.pdf#nameddest=61-04p1-08>

Do you have any comments regarding the powers and duties of the Board?

nothing comes to mind upon a review if the power and duties. they should be adequate.

3. Currently, ARB cost-shares at 34% with local Weather Modification Authorities. This totals to ~\$270,000 annually.

Do you have any comments on the cost-share between ARB and local Weather Modification Authorities?

i believe the state should cost share at a rate of not less than 50%. It could ans perhaps should be at a higher cost share.

4. The powers, functions, and duties of the board are administered under the direction and supervision of the Department of Water Resources. The Board retains the quasi-judicial, quasi-legislative, advisory, budgetary, rulemaking, and other functions vested in it, which are exercised in accordance with policy and guidelines for weather modification activities as established by the DWR.

Do you have any comments about the role of DWR in the context of the Atmospheric Resources Board and its programs?

it is correct as it is. If there are areas for comments, I would make them there. otherwise, this is an excellent program for our state.

5. The Board has partnerships across North Dakota. Please indicate your awareness of the following programs and partnerships:

- UND Pilot Internship Program
- Bowman Radar
- Williston Radar
- Airports located in Bowman, Stanley, Watford City, and Williston
- North Dakota Weather Modification Association
- Other national and regional partnerships such as Weather Modification Association, North American Weather Modification Council, and American Society of Civil Engineers

6. The Board has partnered with UND since 1974 to provide classroom and project flight training in cloud seeding science and operations. To date, 407 students served as intern co-pilots on the program.

Do you have any comments regarding this partnership?

It is a great way for pilots to intern. It brings value to both UND and DWR and Atmospheric Resources. It greatly helps the pilot program for UND. It is a great education program

7. The Board owns and operates weather radars at the Bowman and Stanley airports. Bowman radar is operated year-round through a partnership with eight surrounding regional counties, while Stanley operates during the summer months. The Bowman radar, in particular, provides additional radar coverage over areas of southwest ND, southeast MT, and northwest SD the National Weather Service radars don't provide.

Do you have any comments regarding this program?

If it wouldn't be for these locations and the radar made available, there would be a real and great lack of information and data for all to use.

8. Do you have any additional comments regarding the current or potential future partnerships of the Board?

greater partnerships in every county, all 53 of them. More buy-in and partnerships with the ag community through the ag department and all local and state ag related entities. Other partnerships should be the communities in our state and insurance. With that said, the state insurance commissioner should be involved in the program as well. The communities would see a great benefit to the weather modification program as well as all counties.

9. The Board renews its contract for cloud seeding services every three years. Currently, the Board contracts with Weather Modification International (WMI) based out of Fargo, ND.

Do you have any comments regarding this the Board's use of WMI for cloud seeding services?

they do a great job. If there were other such entities in the state, it would be good to involve them as well.

10. The Board renews its contract for seeding flares annually, if needed. Currently, the Board contracts with Ice Crystal Engineering out of Kindred, ND.

Do you have any comments regarding the Board's use of Ice Crystal Engineering for seeding flares?

it is working well for those involved. again are there other such businesses in the state who could be involved?

The North Dakota Cloud Modification Project (NDCMP) is an operational program that seeds clouds for hail damage reduction and rain enhancement in western North Dakota. Counties currently participating in the program are Bowman, McKenzie, Mountrail, Williams, and part of Slope.

Information related to NDCMP can be found at the following links:

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Is this process sufficient? Do you have suggestions on improving this process?

people are not fully aware of the benefits and how to make this happen. public education is probably key.

12. What are the perceived impacts of this program in your area?

there is a real lack in my area. we do not participate and I wish we did. it would be greatly beneficial for hail suppression and for increased rainfall. there is little to no interest in my county. It is wrong and they do not understand what it could do for our county.

13. Do you have any comments on the NDCMP?

It is a great program. The program in ND is the world leader and should be recognized as such. It should be active in all counties in the state and not just those few listed. Others throughout the world have learned from and implemented their programs based on the knowledge and training and information for our state Authority. It is world class!

14. Name *

Mary Massad

15. County *

- Adams
- Barnes
- Benson
- Billings
- Bottineau
- Bowman
- Burke
- Burleigh
- Cass
- Cavalier
- Dickey
- Divide
- Dunn
- Eddy
- Emmons
- Foster
- Golden Valley
- Grand Forks
- Grant
- Griggs
- Hettinger
- Kidder
- LaMoure
- Logan
- McHenry
- McIntosh
- McKenzie
- McLean
- Mercer
- Morton
- Mountrail
- Nelson
- Oliver
- Pembina
- Pierce
- Ramsey

- Ransom
- Renville
- Richland
- Rolette
- Sargent
- Sheridan
- Sioux
- Slope
- Stark
- Steele
- Stutsman
- Towner
- Traill
- Walsh
- Ward
- Wells
- Williams
- I do not live in North Dakota

16. Contact phone number or email

701-290-8601 and mmassad@ndsupernet.com



ND
ARB

WEATHER MODIFICATION IN NORTH DAKOTA

Darin Langerud - Director, ND Atmospheric Resource Board

Andrea Travnicek, Ph.D. - Director, Department of Water Resources

Dani Quissell - ND Weather Modification Association

NORTH
Dakota | Atmospheric Resource Board
Be Legendary. WATER RESOURCES

NORTH
Dakota | Water Resources
Be Legendary.

MEETING GUIDELINES

The Objectives Of Today's Meeting Are To

Provide A Brief Overview Of The ARB &
The ND Cloud Modification Program

Hear Feedback From The Public Regarding The
Programs To Later Analyze Responses To Further
Guide The Direction Of The ARB's Ongoing
Strategy, Public Policy, & Administration

MEETING GUIDELINES CONTINUED

Opening Presentation Overview of ARB Program
Followed By Open Forum For Feedback

Those Interested In Providing Comments Will
Have Up To 5 Minutes To Speak. The Meeting
Will Conclude At Noon

Comments Provided During Today's Session Will
Be Considered Along With Online Responses To
Survey and Written Comments

WHAT DOES THE ARB DO?

The Atmospheric Resource Board (ARB) Is A Quasi-Judicial, Quasi-Legislative Advisory & Rule-Making Board Under The Supervision Of The Water Commission. ARB Is Co-Located With The Department Of Water Resources & Functions As One Of Its Divisions.

The Primary Functions Of The ARB Are To:

- Carry Out Administrative Procedures Required For The Licensing Of Weather Modification Contractors & The Permitting Of Cloud Seeding Operations & Research Activities
- Develop & Maintain A System For The Collection Of Data & Records Of All Operational Weather Modification Activities
- Conduct Research Into Atmospheric Precipitation Processes To Assess & Improve The Effectiveness Of Cloud Seeding Technology
- Promulgate Rules & Regulations Governing Cloud Seeding Activities To Ensure Environmental & Public Safety
- Monitor & Evaluate Cloud Seeding Activities & Report Back To Sponsoring Entities
- Monitor, Collect, & Disseminate Accurate Precipitation & Climate Data
- Educate & Provide Information Regarding The Atmosphere & Atmospheric Processes

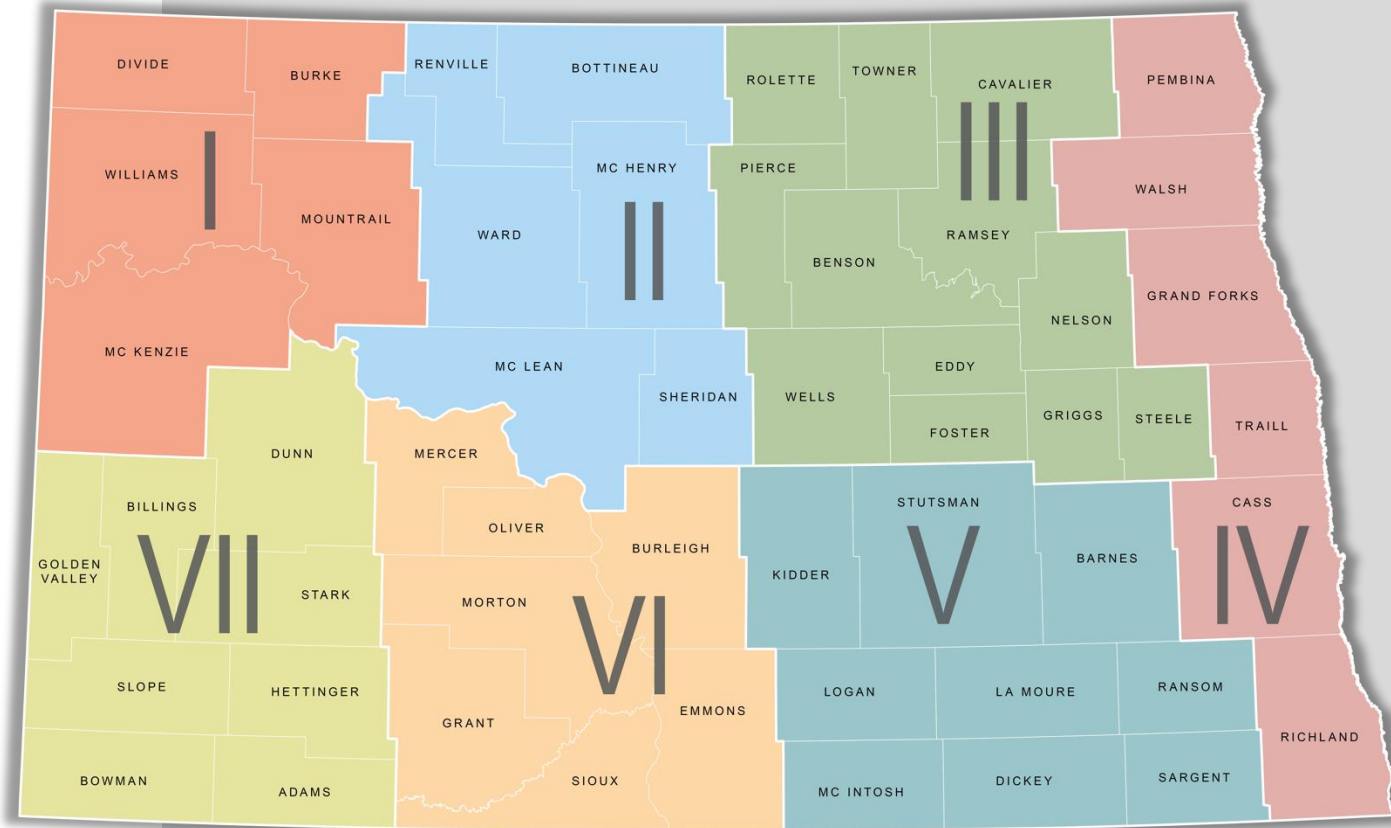
ARB BOARD MEMBERS & EX OFFICIO

DISTRICT MEMBERS

- I - Steven Kemp, Williston, ND
- II - Gail Yuly, Minot, ND (Vice Chair)
- III - David Monson, Osnabrock, ND
- IV - Chris Theisen, Thompson, ND (Chair)
- V - Vacant
- VI - Jessica Magilke, Solen, ND
- VII - Thomas Burke, Bowman, ND

EX OFFICIO MEMBERS

- Andrea Travnicek, Ph.D., Director
ND Department of Water Resources
- Kyle Wanner, Director
ND Aeronautics Commission
- Rebekah Pfaff (Secretary)
ND Department of Environmental Quality



CLOUD SEEDING IN NORTH DAKOTA



- First Seeding **Attempts In 1948**
- Project Areas Established, Ground-Based Seeding **In 1951**
- Aircraft Become Preferred Seeding Method **In 1960**
- State Legislature Creates The ND Weather Modification Board **In 1975** To Provide Regulatory Functions, Operational Support, Conduct Research & Evaluations, & Provide State Cost-Share Funding

NORTH DAKOTA PILOT PROJECT

NDPP CONDUCTED FROM 1969-72

Randomized **(3:1) Proof Of Concept Cloud Seeding Project** In McKenzie County – Mountrail & Ward Included In 1972

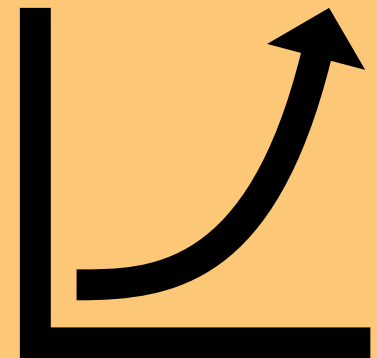


67 Rain Gauges,
Radar Observations

FINDINGS

Statistically Significant Increases In

- (1) The Number Of Rain Events
- (2) Average Rainfall Per Event
- (3) Total Rainfall In The Target Area (~10%)

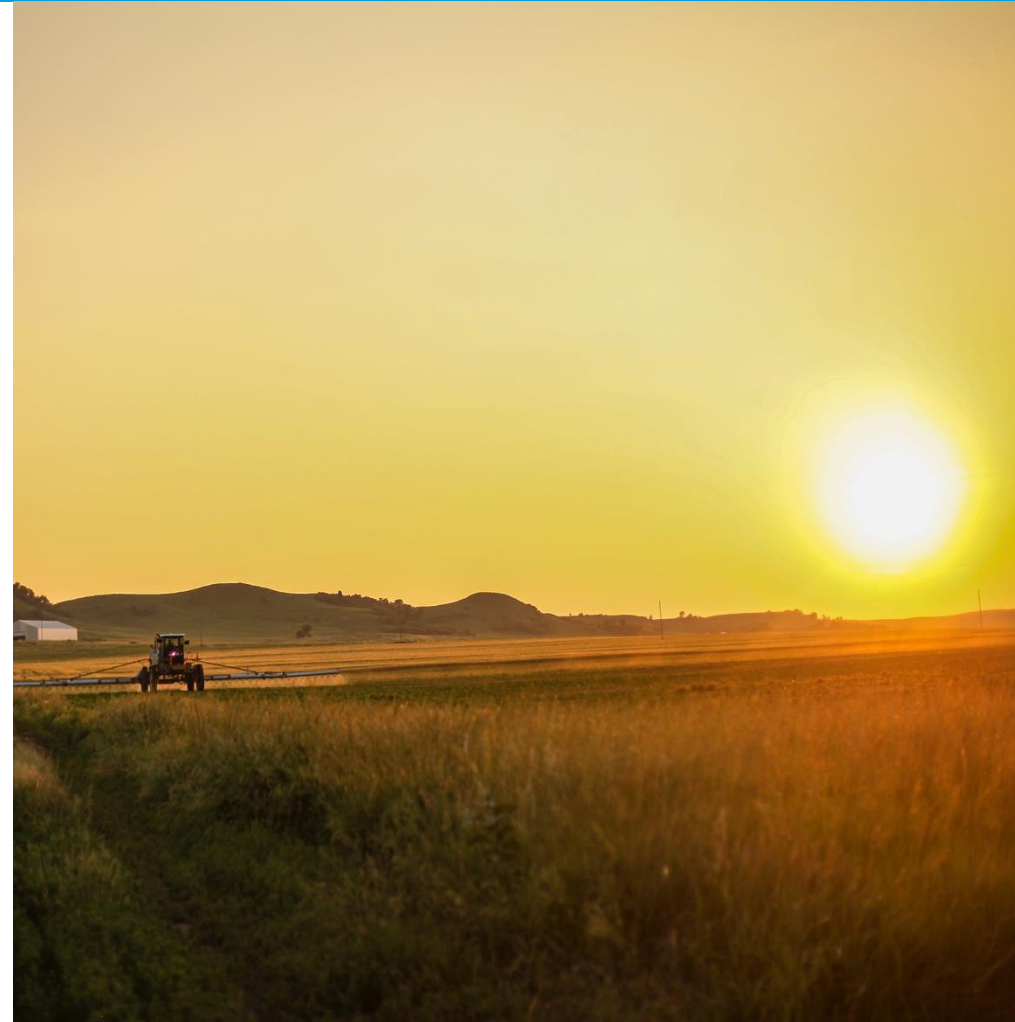


NORTH DAKOTA PILOT PROJECT

FINDINGS CONTINUED

Analysis Of Cloud Seeding On Hail Indicated The Ratio Of Average Rainfall To Hail Energy Was Greater On Seeded Days & Crop-Hail Insurance Losses Lower.

Due To Smaller Sample Size, Results Weren't Statistically Significant



PROGRAM SETUP



- Governed Through N.D.C.C. Chapter 61-04.1
- County or Townships Opt to Participate Via a Public Vote
- In Response to the Vote, County Commission Creates a **10-Year Weather Modification Authority**, Or
- **A Temporary (Up To 4 Year) Authority** Created Via Public Hearing & Resolution Of The County Commission

PROGRAM SETUP



- County Commission **Appoints 5 Members** To the “Weather Modification Authority”, Which Oversees Project in that County
- **Four Counties Have Voted** To Conduct Weather Modification Activities In Their Counties: Bowman, McKenzie, Williams, Mountrail & Participating Townships in Slope County
- County Commissions Review Participation In The Weather Modification Program & Vote On Whether Or Not To Reauthorize The Program **Every Five Years**
 - County Commissions Have Also Put The Question Of Reauthorization To The People Through A Public Vote When It Was Felt That That Was More Appropriate

PROGRAM SETUP



- Authority **Contracts With State** To Provide Cloud Seeding Operations
- Authorities Provide **66% Of Ops Funding, State 34%**
- **Permits Are Issued Annually**
- Require Public Notice & 20-Day Comment Period
- ARB Must Approve Prior To Issuance To Contractor
- Contractors Conducting Seeding Operations **Must Be Licensed By The State**

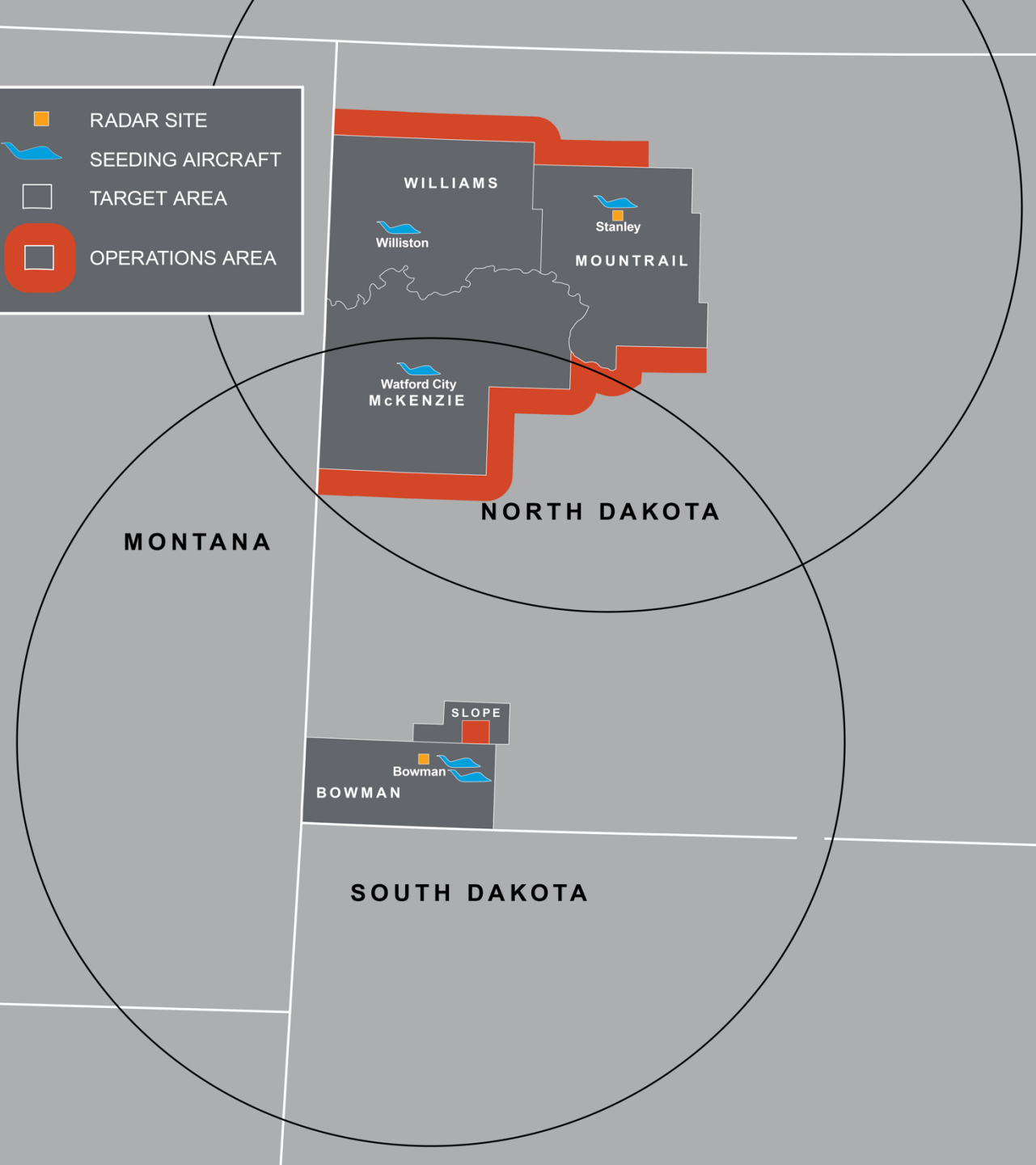
ND CLOUD MODIFICATION PROJECT



- NDCMP Goals Are Hail Suppression & Rain Enhancement
- NDCMP Is Primarily Designed To Benefit Agricultural Production
- Operations From June 1 - August 31 Each Year
 - Extension Into September Is Optional Depending On Crop Conditions & Harvest Progress
- Convective Clouds Are Seeded By Aircraft In The Updraft Below Cloud Base, Or Directly At Cloud Top
- Glaciogenic (Ice-Forming) Seeding Materials & Methods Are Employed

2024 NORTH DAKOTA CLOUD MODIFICATION PROJECT MAP

5.4 M Acres, Or
8,368 mi²



INTERN PROGRAMS



- ARB & UND Memo Of Understanding To Provide Intern Pilot Training **Since 1975**
 - Since Then, **407 Pilot Interns** Have Participated
- ARB's Meteorology Intern Program **Began In 1996** & Has Provided **Training For 73 Students**

TRAINING



- NDCMP Personnel Participate In A Pre-Project Ground School Prior To Startup
- Topics Covered Include:
 - Safety
 - Seeding Operations
 - Forecasting
 - Scientific Concepts
 - Public Relations
 - Administration

NDCMP RADARS



Bowman



Stanley

NDCMP AIRCRAFT



Piper Seneca II
(Base Seeding)



Beechcraft King Air C90
(Top Seeding)



NDCMP SEEDING EQUIPMENT

INDEPENDENT EVALUATIONS

Crop Insurance Analysis Over A 13-Year Period Found **45% Lower Crop-hail Losses** In Seeded Counties VS. Upwind Control

**CLOUD SEEDING PROVIDES
SIGNIFICANT ECONOMIC IMPACTS**

HAIL SUPPRESSION

reduced
crop loss

45%

- Prior Study Of Crop Insurance In 1987 Found 43.5% Reduction
- NODAK Insurance Study Found 43% Lower Incidence Of Hail Claims In Seeded Counties Versus Unseeded ND Counties
- Several Rainfall Studies Using Varied Datasets Have Indicated Percentage Increases From The Low Single Digits To The Low Teens, With **Typical Results In The 5-10% Range**

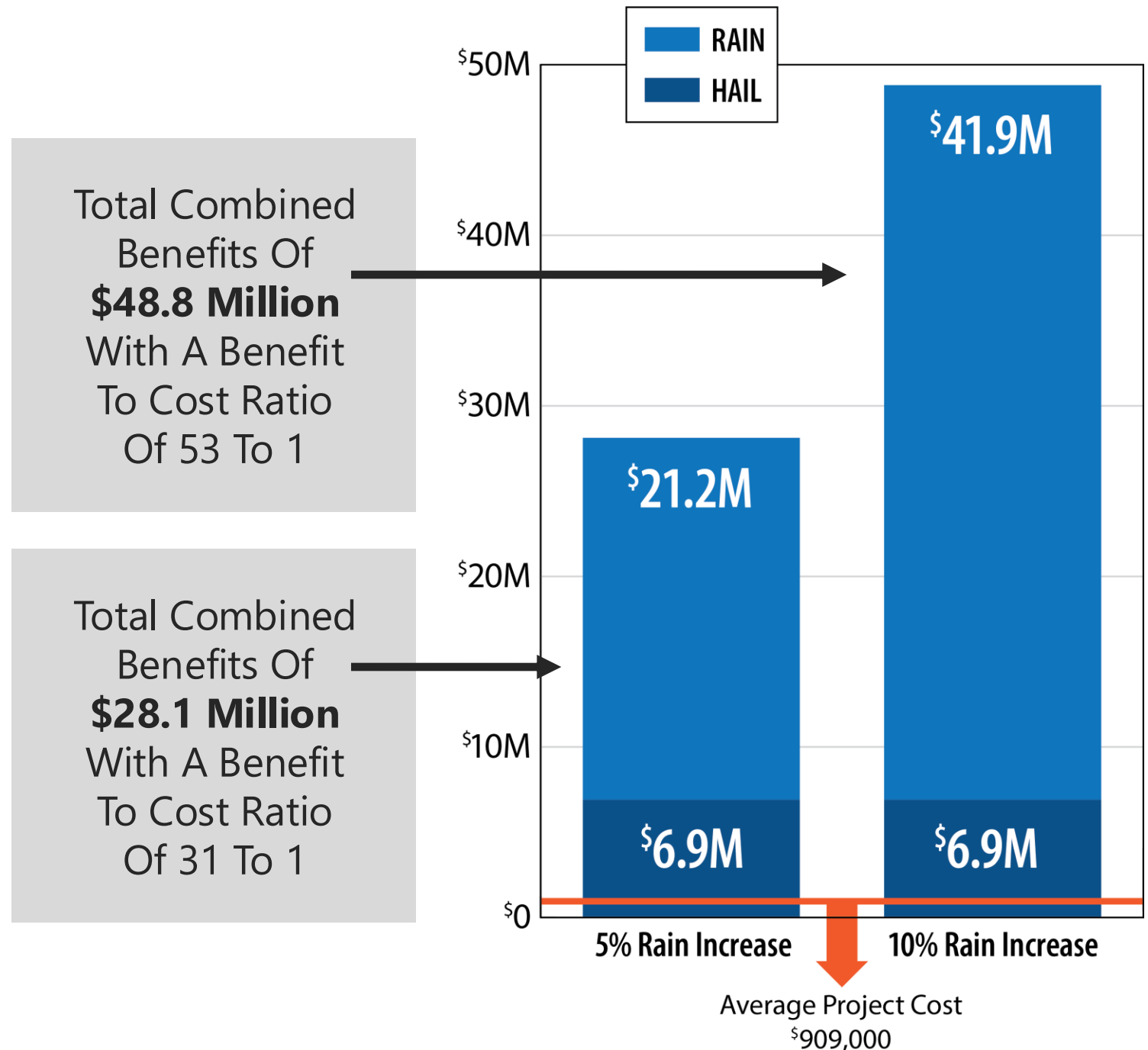
INDEPENDENT EVALUATIONS



- Wheat Yields Were Found To Be **5.9% Higher** On Average In The Seeded Counties Versus An Adjacent Control Area
- Downwind Effects Show A Slight ***Increase*** In Rainfall, Which Is Consistent With Findings From Other Programs In The U.S. & Around The World

ECONOMIC IMPACTS/ AGRICULTURAL CROPS

*Bangsund & Hodur, (2019)
NDSU Agribusiness and Applied
Economics*



INDEPENDENT EVALUATIONS



- Knowles & Skidmore (2021) Analyzed Results Of Wheat & Barley Yields From 1989-2018 In The NDCMP Seeded & Adjacent Unseeded Areas
- Results Of The Crop Analysis Showed Annual Wheat Yields Were Higher By 3.87 Bushels/Acre, Statistically Significant At 0.05
- Crop Insurance Loss Ratios Were Lower In The Seeded Areas
- Economic Benefits Exceeded Costs In Every Year, With An Average Annual Benefit-To-Cost Ratio Exceeding 36 To 1

ONLINE SURVEY

The ARB Issued An Online Survey For Public Feedback. Those Interested In Completing The Survey Can Find It By Scanning The Code Or Visiting The DWR Website.



We Will Now Open The Meeting For Comments. Please Remember Those Interested In Providing Comments Will Have Up To 5 Minutes To Speak. The Meeting Will Conclude At Noon. Comments Provided During Today's Session Will Be Considered Along With Online Responses To Survey & Written Comments.



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THANK YOU



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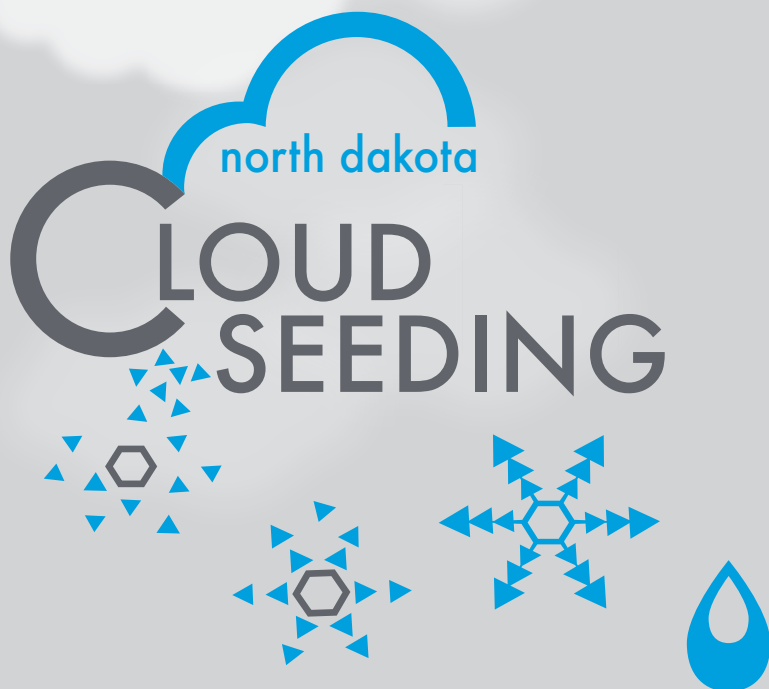


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QUESTIONS & ANSWERS



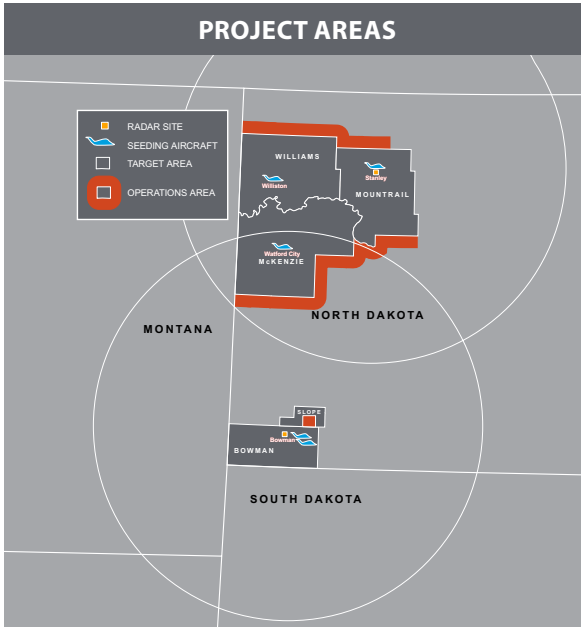
Cloud seeding, often called weather modification, is a process intended to enhance rain and snow, reduce hail damage, and alleviate fog. The science of cloud seeding dates back to 1946, when scientists working at the General Electric Research Laboratory discovered that silver iodide and dry ice could be used to enhance ice crystal formation in clouds. While silver iodide and dry ice are still used today, research and development efforts since 1946 have led to vastly improved understanding of precipitation processes, and greatly enhanced seeding methods and materials.

This brochure addresses the most common questions about the technology and provides the interested reader with references for additional information. If you would like to learn more about cloud seeding in North Dakota, please visit the Atmospheric Resource Board's website at www.dwr.nd.gov/ARB/.

PROGRAMS, EVALUATIONS, ECONOMIC BENEFITS & COSTS

WHERE IS CLOUD SEEDING DONE IN NORTH DAKOTA?

North Dakota's climate is typically drier in the western part of the state, with a higher incidence of hailstorms. Thus, western North Dakota has traditionally been the location for the state's long-running cloud seeding program. Current NDCMP operations areas are shown on the map above.



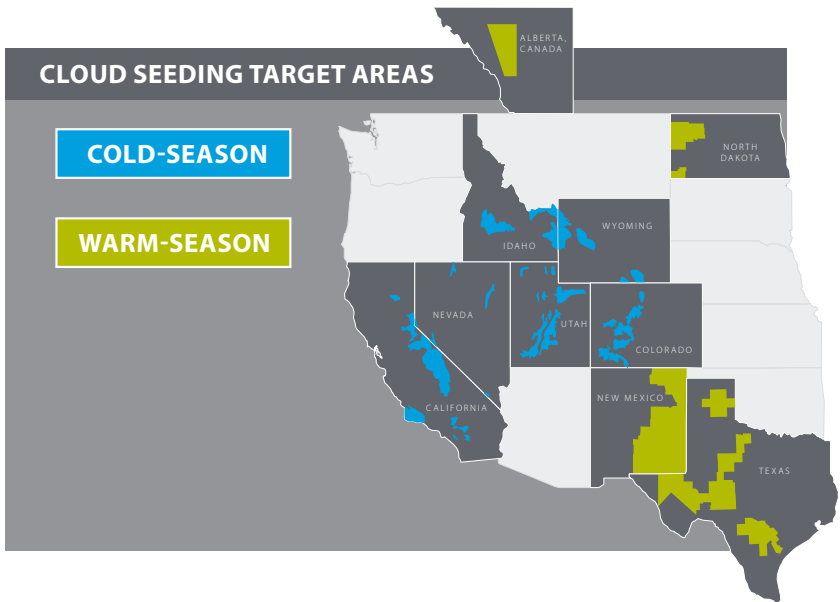
WHO ELSE IS DOING CLOUD SEEDING?

More than 50 countries worldwide participate in cloud seeding activities. The National Oceanic and Atmospheric Administration (NOAA) documented active programs in 10 U.S. states. Project objectives included fog dispersal, snowpack and rainfall enhancement and hail suppression. (See map on next page)

HOW CAN I GET MY COUNTY INTO THE NORTH DAKOTA CLOUD MODIFICATION PROJECT?

There are many ways for a county to join the NDCMP. A petition collecting signatures numbering at least **20 percent** of the ballots cast in the most recent gubernatorial election presented to the county commission would place the issue on the next countywide election ballot. A simple majority in the election would establish the authority to conduct cloud seeding. The

PROGRAMS, EVALUATIONS, ECONOMIC BENEFITS & COSTS



second possibility would be to collect signatures numbering at least **51 percent** of the ballots cast in the most recent gubernatorial election. This petition, when presented to the county commission, would immediately establish the cloud seeding authority.

The third option would be for the county water resource board to bring a resolution to the county commission for the creation of a weather modification authority. After a public hearing, a majority vote by the commission would allow the county to participate in a trial program for up to four years, with several options available to establish a full county weather modification authority after the trial period.

HOW CAN WE DETERMINE THE EFFECTS OF SEEDING?

Seeding effects and benefits can be demonstrated in several ways. The most direct method is to conduct a project over several years in which half of the storms are randomly seeded and the resulting precipitation from the seeded and unseeded storms is compared. From 2005-14, The Wyoming Weather Modification Pilot Program ([WWMPP, 2014](#)) accomplished this goal by setting up a randomized cloud seeding program to research and evaluate the enhancement of snowfall. The results point to an increase in snowfall of 5-15 percent during ideal seeding conditions. For operational cloud seeding programs in the U.S., project sponsors want all the seedable clouds treated,



PROGRAMS, EVALUATIONS, ECONOMIC BENEFITS & COSTS

not just half, to attain the maximum potential benefit from the program. In that scenario, evaluations using crop-hail insurance data, crop yield data, or rainfall and hail data are useful if done properly. These evaluations require long-term relationships to be established between seeded and unseeded areas, and a long period of operations for comparison purposes, but do not require that only half of the suitable clouds be treated.

ARE THERE NORTH DAKOTA PROJECTS THAT HAVE DETERMINED THE EFFECTS OF SEEDING?

Yes. The first such effort, which built the foundation of cloud seeding in North Dakota was called the North Dakota Pilot Project (NDPP) ([Miller et al., 1975](#)). Conducted in McKenzie County from 1969-72 (Mountrail and Ward Counties also participated in 1972), the NDPP was a randomized experiment, which provided for the best possible statistical analysis of the results.

Experimental protocol set up eight-day blocks in advance of each project season where six days were randomly designated “seed” days and two were “no-seed” days. Following the four-year project, data from 67 rain gauges in McKenzie County were subjected to a variety of statistical tests to determine the seeding effects.

Analysis of the data revealed strong evidence that silver iodide seeding of towering summertime clouds led to an increase in the frequency of rainfall events, an increase in the average rainfall per event, and an increase in the total rainfall in the seeded area. Further, the total potential rainfall increase for the area was estimated at one inch per growing season. **Hail data from the NDPP showed less hail on seed days than on no-seed days and lower crop-hail insured losses on seed days versus no-seed days.**

WHAT ARE THE BENEFITS OF THE NORTH DAKOTA CLOUD MODIFICATION PROJECT?

Several independent evaluations of the NDCMP have been conducted to determine the effects of the project on rainfall, crop-hail damage, wheat yields, and economic impact. A study of crop-hail insurance data by [Smith, et al. \(1997\)](#) showed a 45 percent reduction of crop-hail damage in the seeded counties. Several independent studies ([Miller et al., 1975](#); [Eddy, 1981](#); [Johnson, 1985](#); [Wise, 2005](#); [Tuftedal et al., 2022](#)) have found that rainfall was increased in the target counties (and downwind) from 3 to 14 percent, an increase of up to an inch of additional growing season moisture. A study of wheat yields by [Smith, et al. \(1992\)](#) found an increase of 5.9 percent in the seeded counties versus an adjacent control area with no cloud seeding. [Knowles and Skidmore \(2021\)](#) found wheat yields 13 percent higher in seeded counties versus adjacent control counties.

WHAT IS THE DOLLAR-IMPACT OF CLOUD SEEDING IN NORTH DAKOTA?



PROGRAMS, EVALUATIONS, ECONOMIC BENEFITS & COSTS

Several studies of the economic effects of cloud seeding have been conducted by economists at NDSU's Department of Agribusiness and Applied Economics (e.g., [Schaffner et al. 1983](#), [Johnson et al. 1989](#), [Sell and Leistriz, 1998](#), [Bangsund and Leistriz, 2009](#)). The most recent by NDSU's [Bangsund and Hodur \(2019\)](#) examined the benefits to the eight most common crops grown in North Dakota. Using long-term estimates of 5-10 percent increases in rainfall and a 45 percent reduction in crop-hail losses, they calculated a direct benefit to agricultural production of \$28.1-\$48.8 million annually. Estimated state tax revenues ranged from \$576,000 to \$999,000; more than double the amount of state cost share funds expended on the program. Benefit to cost ratios ranged from 31-53 to 1.

[Knowles and Skidmore \(2021\)](#) at Michigan State University evaluated the North Dakota Cloud Modification Project (NDCMP) and its effects on crop yields. Using 30 years of USDA Risk Management Agency data, their analysis sought to determine if there was any difference in crop yields (wheat and barley) and insurance loss ratios for NDCMP project counties versus surrounding counties not involved in the program. For the 1989-2018 period, they found that average annual wheat yields in seeded counties were 13 percent higher than wheat yields in non-seeded counties. A further analysis of economic benefits found a benefit to cost ratio of more than 36 to 1. In the words of the authors, "Our evaluation indicates that the cloud seeding program had significant positive effects on crop yields and improved loss ratios."

DO URBAN RESIDENTS BENEFIT FROM CLOUD SEEDING, OR IS IT JUST FOR AGRICULTURE?

Although the program was started to help farmers mitigate hail damage to crops, the reduction of hail size and amount is also presumed to reduce hail damage to homes, vehicles, and other property in the target counties. In fact, reduction of property damages has provided for an insurance industry-sponsored program in Alberta, Canada.

WHAT IS THE COST OF CLOUD SEEDING IN NORTH DAKOTA?

For approximately 15 cents per acre, the NDCMP provides benefits that far outweigh the costs of the program.

WHO PAYS FOR CLOUD SEEDING IN NORTH DAKOTA?

The costs of cloud seeding are paid with funds from the participating counties and cost-share funds from the State. About two-thirds (66 percent) of the project is paid through county funds, and one-third (34 percent) by the State.



CLIMATE AND ENVIRONMENT

DO CLOUD SEEDING CHEMICALS HAVE AN EFFECT ON THE ENVIRONMENT?

Published scientific literature clearly shows **no environmentally harmful effects** from cloud seeding with silver iodide aerosols ([WMA, 2009](#)). The silver concentration in rainwater from a seeded storm is well below the acceptable environmental concentration of 50 micrograms per liter as set by the U.S. Public Health Service. Because silver iodide is such an effective ice nucleus, it is used in very small quantities. Based on the average rate of seeding material used in North Dakota each summer, only one one-hundredth of a gram (0.01g) would be expected to fall on an acre of land during the summer project.

CAN CLOUD SEEDING CHANGE WEATHER PATTERNS OR AFFECT THE CLIMATE?

No. Cloud seeding changes individual clouds or groups of clouds. Changes to large-scale weather and climate patterns are determined by much greater forces such as global atmospheric circulation patterns and ocean temperatures.

CAN CLOUD SEEDING END DROUGHTS?

No. Although drought is sometimes the impetus for implementing a cloud seeding program, it is not generally advocated for such purposes. The reason for this is that droughts are caused by prolonged periods that do not produce clouds conducive to precipitation. Therefore, cloud seeding opportunities during these periods are few, often providing limited results. Long-term and well-designed cloud seeding programs can potentially soften the impact of drought, however, since increased precipitation before and after drought would temper the reduction of rainfall during the drought period. Cloud seeding should be viewed as a long-term water resource management tool.

DOES CLOUD SEEDING AFFECT PRECIPITATION DOWNWIND?

Evidence suggests a slight increase in precipitation downwind that diminishes with increasing distance from the target area ([DeFelice et al., 2014](#)). There is no scientific evidence that cloud seeding, which enhances rainfall in one area, produces dry conditions downwind.

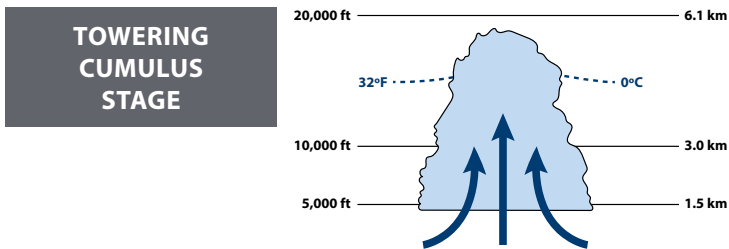
CLOUD PROCESSES AND SEEDING METHODS

HOW DOES CLOUD SEEDING WORK?

Cloud seeding improves a cloud's ability to produce precipitation by adding tiny particles called ice nuclei (particles with an ice crystal structure that water needs to freeze). These nuclei help the cloud produce precipitation by freezing **supercooled liquid water (SLW)**, which are cloud droplets still in liquid form at temperatures colder than 32°F. Natural ice nuclei are often inefficient or lacking in sufficient numbers in the atmosphere. Adding more efficient ice nuclei through seeding can increase the precipitation production of the cloud.

ARE ALL CLOUDS GOOD CANDIDATES FOR SEEDING?

No. For summertime cloud seeding, only clouds that possess a sustained updraft of moist air, lack natural ice, and grow to heights cold enough to contain SLW are suitable for cloud seeding.

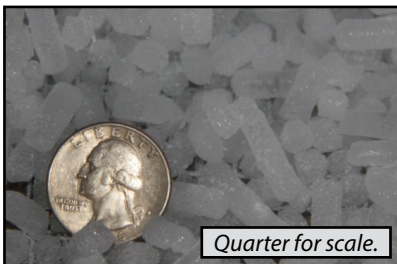


WHAT ARE CLOUDS SEEDED WITH?

North Dakota clouds are seeded with two different types of materials:

- Silver Iodide-Artificial Ice Nuclei that provide a crystalline structure on which SLW droplets can freeze;
- Dry Ice, which at -109°F is so cold that it helps create additional droplets from water vapor and freezes those droplets instantaneously.

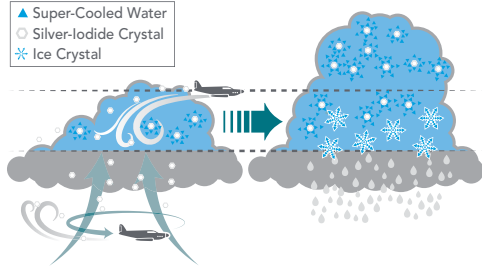
DRY ICE PELLETS



Dry ice pellets are used on some cloud seeding programs. They are typically dropped by airplanes in towering cumulus clouds during summer seeding programs to accelerate the precipitation process.

CLOUD PROCESSES AND SEEDING METHODS

WARM SEASON CLOUD



HOW LONG AFTER SEEDING DOES A CLOUD START TO CHANGE?

The onset of seeding effects can range from almost immediate to up to 30 minutes depending on the seeding delivery method (**direct injection** at cloud top, or **base seeding** - releasing seeding agent in the updraft below the cloud base). Direct injection is more immediate, but involves flying in-cloud and working at higher altitudes, requiring aircraft with higher performance (and costlier) capabilities. Updraft treatment at cloud base is easier to accomplish, but requires the seeding agent be transported by the cloud's updraft to where it can become effective, thus taking a little longer. As each method offers advantages in certain situations, both are employed in North Dakota.

WHO DECIDES WHICH CLOUDS ARE SEEDED?

The radar meteorologist, an employee of the Department of Water Resources, is the director of operations for cloud seeding missions. In addition to weather conditions, a number of factors play a part in the decision-making process including input from participating counties, safety criteria, radar information, pilot observations, and aircraft instrument data.

HOW DOES SEEDING AFFECT THE DEVELOPMENT OF PRECIPITATION IN A CLOUD?

Evidence indicates that seeded storms often rain over larger areas than unseeded storms. This means some areas that would not have received rain often do as a result of seeding ([Dennis et al., 1975](#)). By seeding developing clouds before they start to produce precipitation, the precipitation process is accelerated and rain falls sooner, and from smaller clouds than it would naturally.

CLOUD PROCESSES AND SEEDING METHODS

HOW IS THE SEEDING AGENT DELIVERED TO SUITABLE CLOUDS?

In North Dakota, all seeding is done by aircraft. Base-seeding aircraft release seeding agent into updrafts from below the developing storm using a combination of wing-mounted ice nucleus generators and burn-in-place flares. Cloud-top seeding aircraft use ejectable flares and dry ice released directly into the supercooled cloud.



Wing-Tip Generator



Ejectable Flare Racks



Burn-In-Place Flares

ISN'T FLYING AIRCRAFT AROUND THUNDERSTORMS DANGEROUS?

All pilots that fly seeding aircraft on the North Dakota Cloud Modification Project (NDCMP) are trained through classroom education, intern experience, and/or field experience with a qualified weather modification pilot instructor. With these requirements in place the flight safety record in North Dakota has been excellent.

WHY DOES HAIL SOMETIMES FALL FROM SEEDED STORMS?

Cloud seeding for hail suppression is just that: hail **suppression**, not hail **elimination**. Studies of crop-hail insurance data suggests that the NDCMP reduces crop-hail damage by 45 percent ([Smith et al., 1997](#)). Hail still occurs in areas with hail suppression cloud seeding. The reasons for this are many, but they involve storm structure (seeding works better on some storm types than others), the ability to seed targeted storms safely and effectively (sometimes safety criteria preclude effective treatment of targeted storms) and working with limited resources (sometimes there are more storms occurring at one time than there are resources available to adequately seed them). Also, occasionally storms already containing hail enter the target areas, and for this situation there is no remedy - the hail will eventually fall.

CLOUD PROCESSES AND SEEDING METHODS

WHY DO SOME THUNDERSTORMS PRODUCE HAIL, WHILE OTHERS DON'T?

Hail often occurs when atmospheric instability is great, and when strong wind shear (strong variations of wind speed and direction with height) is present. Thunderstorm ingredients include atmospheric instability (warm air at the surface and cold air aloft), abundant moisture, and a weather feature such as a cold or warm front to initiate storm development. While a small percentage of storms produce hail on the ground, a larger percentage develop hail during their lifecycles that falls and melts before it reaches the ground.

WHO SEEDS CLOUDS AND WHAT KIND OF TRAINING IS REQUIRED?

The Atmospheric Resource Board (ARB) retains contractors who provide the aircraft, seeding equipment and pilots to seed clouds. Pilots-in-command must meet certification and flight-time requirements; meteorologists must possess a bachelor's degree in Meteorology or Atmospheric Science to qualify. The ARB also maintains an intern program through the University of North Dakota's John D. Odegard School of Aerospace Sciences for academic and field training of weather modification intern pilots. Another ARB program provides meteorology students a summer educational opportunity working as intern meteorologists at the Bowman and Stanley radar sites. In addition, the ARB conducts a ground school prior to each project covering all pertinent aspects of the program.



PIC and Intern Pilot in Stanley, 2021



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Atmospheric Resource Board

WATER RESOURCES

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NORTH DAKOTA CLOUD SEEDING



THE FACTS

A 2019 economic study of the NDCMP by Bangsund and Hodur at NDSU found benefit to cost ratios of 31-53 to 1 for summer season agricultural production.

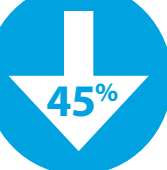
As of 2024, the NDCMP has provided 412 UND aviation students and 76 meteorology students with internships.

Since 1996, insurance companies in Alberta, Canada have solely funded a hail suppression project to reduce property damage from hail.

Cloud seeding agents, including silver iodide and dry ice, meet all National Environmental Policy Act (NEPA) regulations and are safe for the environment.

\$0.15
Per Acre

2023 NDCMP rain enhancement and hail suppression operations cost only \$0.15/acre. Participating counties pay 66% of the cost, while the state pays the remaining 34%.



Cloud seeding studies in North Dakota indicate a 45% reduction in crop hail losses.

5-10%

Cloud seeding produces an estimated 5-10% in additional rainfall for farmers and ranchers in western North Dakota's project area.

150,000
Square Miles

Operational cloud seeding programs in the United States cover approximately 150,000 square miles, or more than twice the area of North Dakota.



ND PROJECT MAP

North Dakota Cloud Modification Project (NDCMP) Participants

Bowman Mountrail Part Of Slope
McKenzie Williams County

North Dakota has conducted cloud seeding operations annually since 1961.

The NDCMP is the longest running aerial hail suppression project in the world.



WEATHER MODIFICATION

PROGRAMS IN WESTERN
US & CANADA

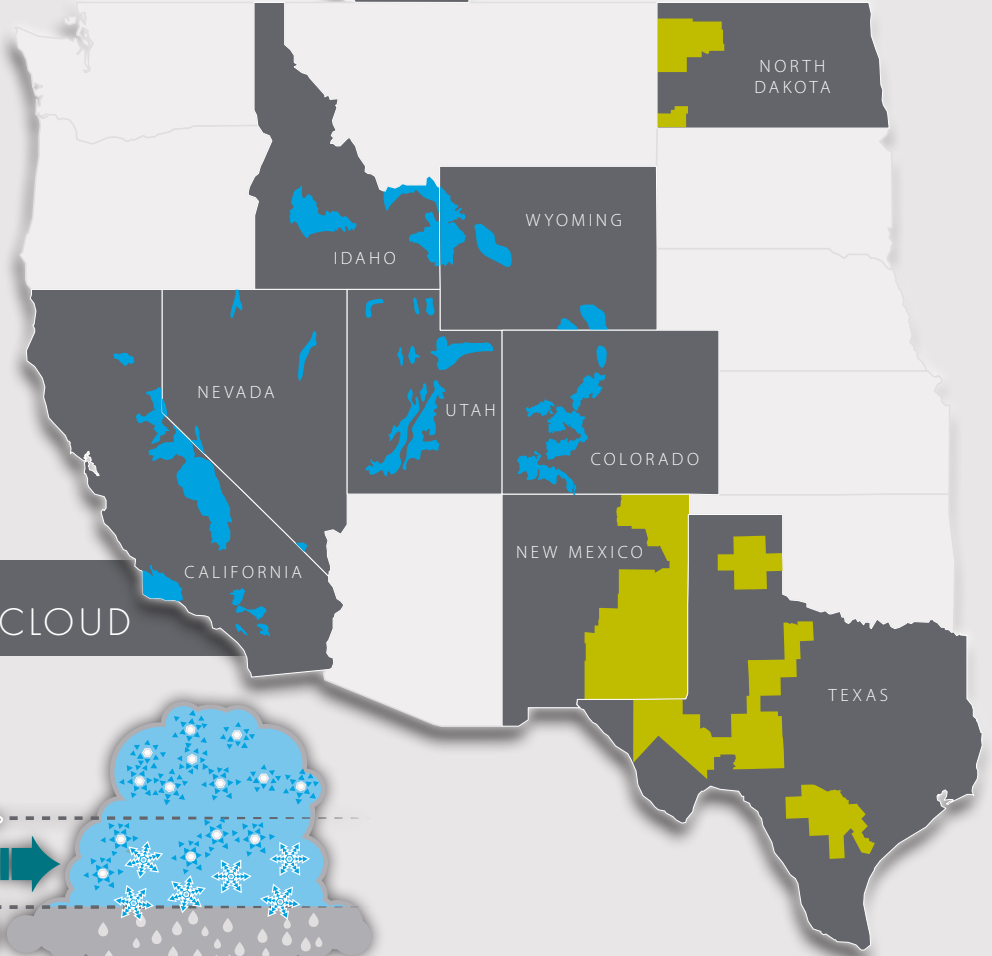
ALBERTA,
CANADA

CANADA

CLOUD SEEDING TARGET AREAS

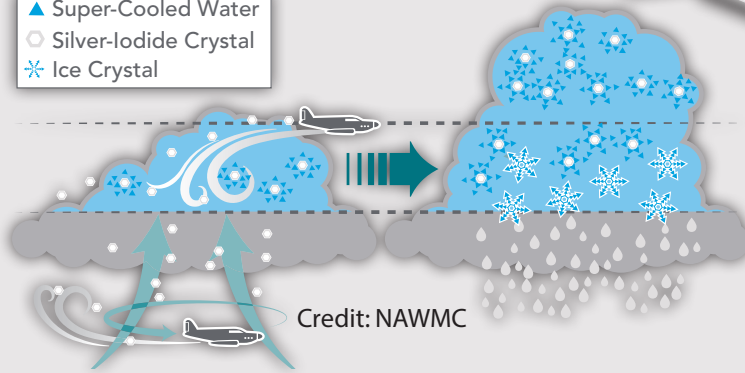
Cold-Season

Warm-Season



WARM SEASON CLOUD

- ▲ Super-Cooled Water
- Silver-Iodide Crystal
- * Ice Crystal

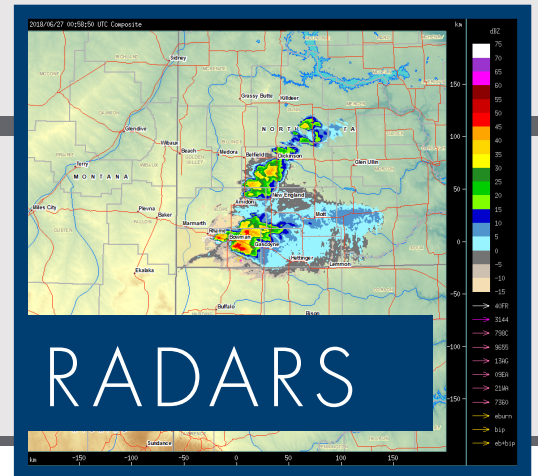


Credit: NAWMC

The Bowman and Stanley Radars display storm location, intensity, aircraft positions, and seeding tracks during cloud seeding operations.

Stanley and Bowman radar images are available online from June through August and updated every five minutes at <http://dwr.nd.gov/arb>.

The Bowman radar runs year-round through funding by eight regional counties and provides residents with improved radar coverage.



NORTH
Dakota
Be Legendary.

Atmospheric Resource Board
WATER RESOURCES

Subject: In the Clouds... Facts about Cloud Seeding
Date: Friday, August 16, 2024 at 4:05:44 PM Central Daylight Time
From: ND Department of Water Resources
To: -Grp-DWR All

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In the Clouds

This is the first installment of In the Clouds, a new educational campaign from the DWR. You will learn about cloud seeding, the North Dakota Cloud Modification Program, and the Atmospheric Resource Board.

What is cloud seeding?

We will get into more detail about the science behind cloud seeding in an upcoming installment, but here are the basics:

Cloud seeding can be done in warm or cold weather, depending on desired outcome. In North Dakota, we do warm weather seeding, to **enhance rain and suppress damaging hail.**

Cloud seeding is a safe and scientific set of technologies used to enhance precipitation and reduce hail damage.

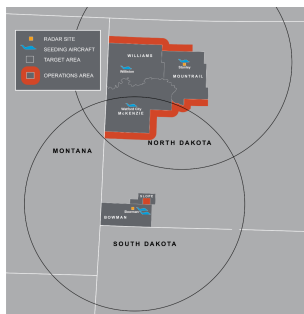
Silver iodide and dry ice are "**seeded**" into clouds via airplanes. They attract supercooled water droplets and aid their transition into ice crystals, which fall to the earth as rain. If the conditions are right for hail, the seeding provides



more particles for the water droplets to adhere to, decreasing the size of the hail, and as a result, reducing damages.

Does silver iodide have an effect on the environment?

Published scientific literature show no environmentally harmful effect from cloud seeding with silver iodide aerosols. The silver concentration in rainwater from a seeded storm is far below acceptable environmental concentrations of 50 micrograms per liter as set by the U.S. Public Health Service. Because silver iodide is such an effective ice nucleus, it is used in very small quantities. Based on the average rate of seeding material used in North Dakota each summer, less than one-hundredth of a gram (0.01g) would be expected to fall on an acre of land during the summer project.



Cloud Seeding in North Dakota

Four counties in North Dakota: Mountrail, Williams, McKenzie, Bowman, as well as townships in Slope County, participate in the North Dakota Cloud Modification Program (NDCMP).

History of North Dakota Cloud Modification Program (NDCMP)

Cloud seeding is nothing new in North Dakota. The first seeding attempts in the state were in 1948. Once project areas were established, ground-based seeding was used until aircraft became the preferred seeding method in 1960.

The State Legislature created the ND

DID YOU KNOW?



The NDCMP is the **longest running aerial hail suppression project in the world!**

Weather Modification Board in 1975 to provide regulatory functions, operational support, conduct research and evaluations, and provide state cost-share funding. Counties vote to opt in to the NDCMP. The county commission then creates a 5-member "Weather Modification Authority" to oversee each county's project.

For the programs to continue, County Commissions must reauthorize their participation every five years.

[Learn more about the ARB and NDCMP](#)

Who decides which clouds are seeded?

Radar meteorologists, located at Bowman and Stanley, direct operations for cloud seeding missions. In addition to weather conditions, a number of factors play a part in the decision-making process including input from participating counties, safety criteria, radar information, pilot observations, and aircraft instrument data.

What are the goals of cloud seeding?

1

Enhance rainfall by helping clouds become more efficient rain producers, promoting better soil conditions for farmers.

2

Suppress hail by providing more particles for droplets to adhere to before falling to the ground. Smaller hail has a better chance of melting completely and is less harmful to crops and buildings.

Coming up... In the Clouds

In our next installments of In the Clouds: The science behind cloud seeding from the sky to the soil, what the studies are saying about its efficacy, and benefits for ag producers.



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701.328.2782



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Date: Friday, August 23, 2024 at 9:03:23 AM Central Daylight Time
From: ND Department of Water Resources
To: -Grp-DWR All

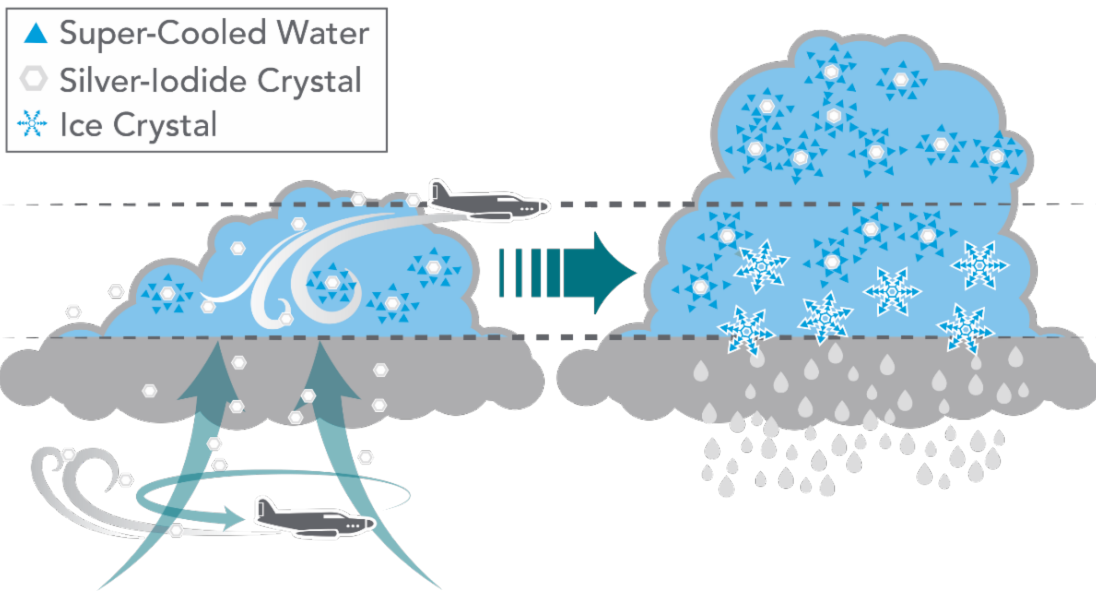
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In the Clouds

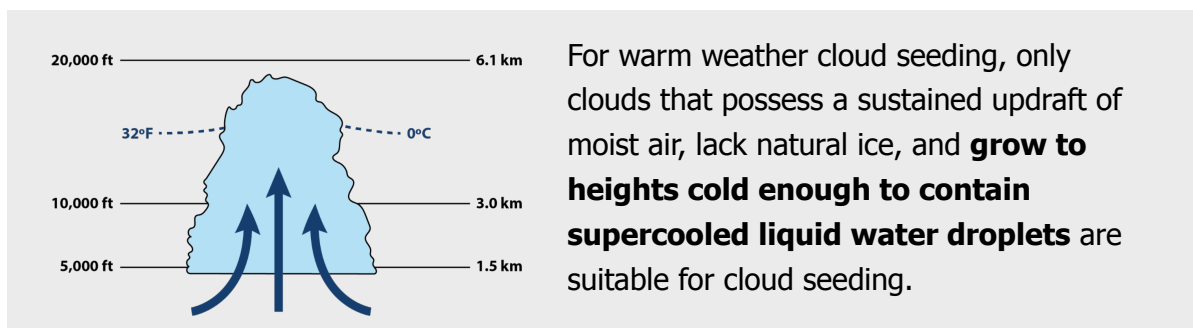
This is the second installment of In the Clouds, a new educational campaign from the North Dakota Department of Water Resources.

How does cloud seeding affect the development of precipitation in a cloud?



- 1 Silver iodide or dry ice is released in the updraft or placed directly in the cloud. Both are excellent at attracting and freezing supercooled water droplets at warmer temperatures than other particles in the atmosphere.
- 2 The ice crystals that grow large enough to fall toward the ground melt into raindrops along the way. Seeding enhances the ability of the cloud to produce raindrops large enough to reach the earth.
- 3 To reduce a potential hailstorm, seeding provides more ice particles for droplets to attach to, making more, smaller particles and spreading the energy of the storm over a larger area.

Not all clouds are good candidates for seeding



Why does hail sometimes fall from seeded storms?

- Storm structure (seeding works better on

CLOUD SEEDING IS

HAIL SUPPRESSION

NOT HAIL ELIMINATION

- some storm types than others).
- The ability to seed targeted storms safely and effectively (sometimes safety criteria preclude effective treatment of targeted storms).
- Working with limited resources (sometimes there are more storms occurring at one time than there are resources available to adequately seed them at the time).

Who seeds clouds and what kind of training is required?

The Atmospheric Resource Board (ARB) manages contracts for aircraft, seeding equipment, and pilots for cloud seeding operations. Pilots must meet specific certification and flight-time requirements, while meteorologists need a bachelor's degree in meteorology or Atmospheric Science. The ARB also runs an **intern program with the University of North Dakota's John D. Odegard School of Aerospace Sciences**, offering hands-on training for weather modification intern pilots. Additionally, meteorology students can gain summer experience as intern meteorologists at the Bowman and Stanley radar sites. Before each project, the ARB conducts a ground school to cover all key aspects of the program.

In our third and final installment of In the Clouds, we will focus on the economics behind cloud seeding programs, and what the dollar-impact is in North Dakota.



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Subject: In the Clouds... Facts about Cloud Seeding
Date: Thursday, September 12, 2024 at 9:25:30 AM Central Daylight Time
From: ND Department of Water Resources
To: -Grp-DWR All

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In the Clouds

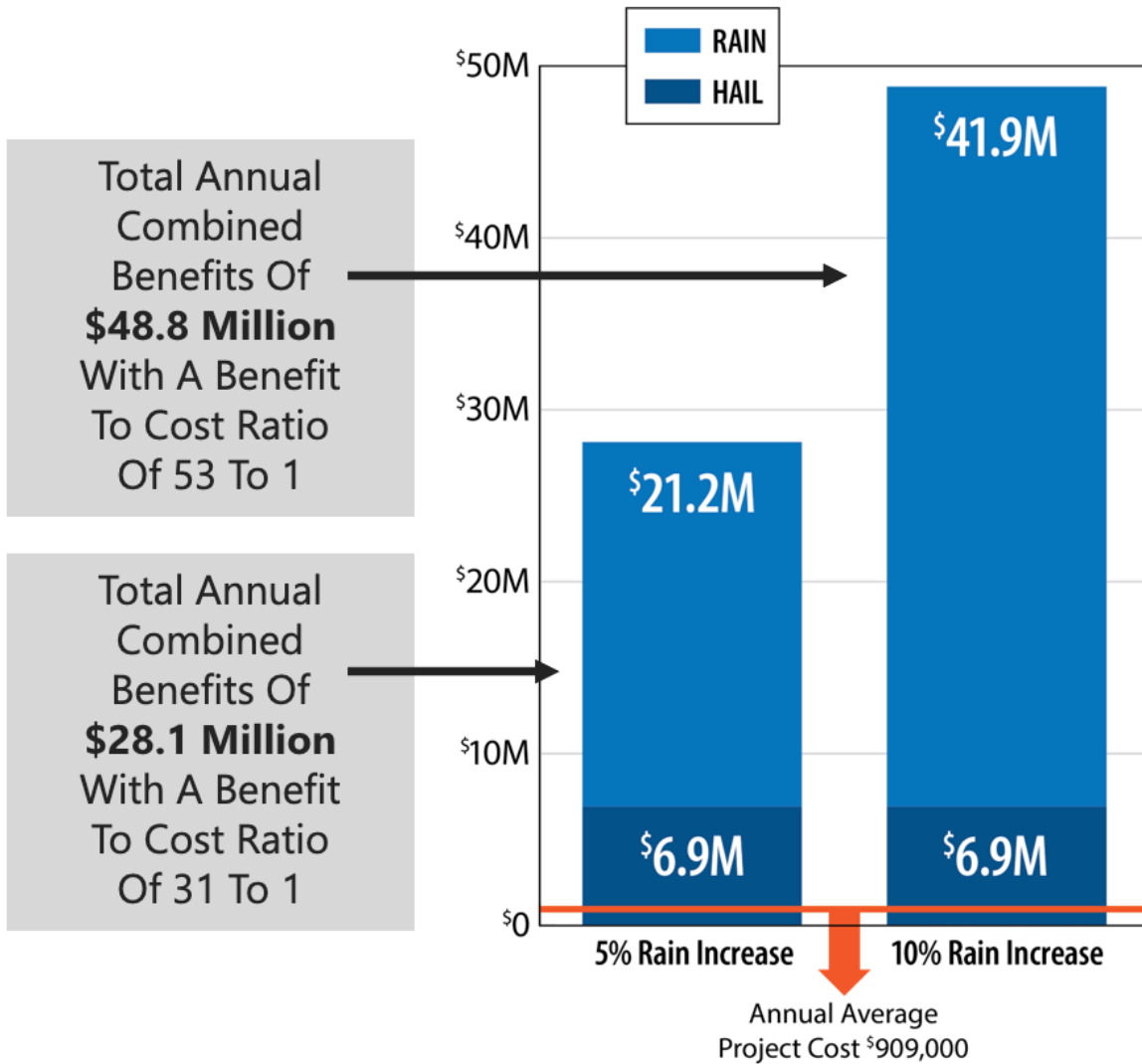
This is the final installment of In the Clouds, a new educational campaign from the North Dakota Department of Water Resources.

How do we know if cloud seeding is effective?

North Dakota has the longest running aerial cloud seeding program **in the world**. Because of the longevity of the program, we have robust data sets for economists to analyze.

Cost-Benefit Ratio of Cloud Seeding in North Dakota

Cloud seeding has been shown to enhance rain, reduce crop hail loss, and increase crop yields. The 2019 NDSU study "[Economic Impact of Cloud Seeding in North Dakota](#)" provides detailed insights into the cost-benefit analysis of cloud seeding for western North Dakota counties that participate in the North Dakota Cloud Modification Project (NDCMP).



[Read the full study](#)

Cost-benefit ratios annually for cloud seeding program in western North Dakota counties from 2008-2017. Bangsund & Hodur, (2019) NDSU Agribusiness and Applied Economics

Cloud Seeding and Crop Insurance

Crop Insurance Analysis
 Over A 13-Year Period
 Found **45% Lower**
Crop-hail Losses In

CLOUD SEEDING PROVIDES SIGNIFICANT ECONOMIC IMPACTS

HAIL SUPPRESSION

reduced
crop loss

45%

NDCMP Counties VS. Upwind Control

By the numbers: 30 years of data from the NDCMP

3.87

Impact on Crop Yields

NDCMP counties grow **3.87 bushels more** wheat per harvested acre.

36:1

Economic Benefits

Increases in crop production contribute to an economic benefit-to-cost ratio of **more than 36 to 1**.

21/
30

Impact on Crop Insurance

Crop loss ratios were lower in the NDCMP counties vs. unseeded counties in **21 of the 30 years** of the study.

[Read the full study](#)

Knowles and Skidmore, 2021, American Meteorological Society

Different studies, similar results

The NDCMP, the world's longest-running program of its kind, boasts decades of data that provide unmatched insights into cloud seeding in western North Dakota. Despite using different methodologies, these two recent studies both show similar positive results.

[Learn More About the ND Atmospheric Resource Board](#)

[Learn More About the ND Department of Water Resources](#)

Thank you for reading In the Clouds. We hope you learned more about the science and economics of cloud seeding, as well as the NDCMP and ARB. Our next educational campaign will focus on watersheds in North Dakota.



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