AGENDA

IDAHO WATER RESOURCE BOARD

Cloud Seeding Committee Meeting No. 2-21
Monday, June 28, 2021
1:00 p.m. (MST)

Water Center
Conference Rooms 648A / Online Zoom Meeting
322 E. Front St.
BOISE

(This meeting will be conducted using guidance in response to the public health emergency caused by the COVID-19 pandemic. Masks are required & in person attendance is limited. Call or email if you have questions: jennifer.strange@idwr.idaho.gov)

Board Members & the Public may participate via Zoom
Click here to join our Zoom Meeting
Dial in Option: 1(253) 215-8782
Meeting ID: 915 6705 1353 Passcode: 408231

1. Introductions and Attendance
2. House Bill No. 266 – Cloud Seeding
3. Proposed Cloud Seeding in Bear River Basin*
4. Comments by Idaho Power Company
5. Other Items
6. Adjourn

Committee Members: Chair Roger Chase, Al Barker, Jeff Raybould, and Pete Van Der Meulen

* Action Item: A vote regarding this item may be made this meeting. Identifying an item as an action item on the agenda does not require a vote to be taken on the item.

Americans with Disabilities
The meeting will be held telephonically. If you require special accommodations to attend, participate in, or understand the meeting, please make advance arrangements by contacting Department staff by email jennifer.strange@idwr.idaho.gov or by phone at (208) 287-4800.

Memorandum

To: Idaho Water Resource Board Cloud Seeding Committee

From: Kala Golden

Date: June 25, 2021

Re: Cloud Seeding Program Expansion

REQUESTED ACTION: Consider a resolution to authorize funding for a statewide climatology assessment and pilot cloud seeding project in the Bear River Basin.

Background

House Bill (HB) 266, passed by the 2021 Idaho Legislature, recognized that expansion of the cloud seeding program may benefit basins throughout the state that experience depleted or insufficient water supplies. HB 266 recommended that the IWRB complete an assessment of basins and work with affected stakeholders to implement the cloud seeding program in basins that would benefit from the program.

In response to legislative direction and stakeholder interest in the Bear River Basin, the IWRB directed staff to consider statewide cloud seeding opportunities and initiate the development of a pilot cloud seeding program in the Bear River basin beginning winter 2021. A presentation will be given at the Board's June 28th Cloud Seeding Committee Meeting on proposed build out of a program in the Bear River Basin and the development of a statewide climatology assessment to determine the potential for cloud seeding in other basins.

Attachments

1. House Bill 266
2. Draft Resolution to authorize funding for a pilot project in the Bear River Basin and statewide climatology assessment
3. PowerPoint Presentation on proposed build-out and climatology assessment

LEGISLATURE OF THE STATE OF IDAHO

Sixty-sixth Legislature First Regular Session - 2021

IN THE HOUSE OF REPRESENTATIVES

HOUSE BILL NO. 266

BY RESOURCES AND CONSERVATION COMMITTEE

AN ACT

RELATING TO WATER; AMENDING TITLE 42, IDAHO CODE, BY THE ADDITION OF A NEW CHAPTER 43, TITLE 42, IDAHO CODE, TO PROVIDE FOR CLOUD SEEDING, TO PROVIDE LEGISLATIVE FINDINGS, TO DEFINE A TERM AND TO PROVIDE EXCEPTIONS, TO PROVIDE FOR PROGRAMS AND CONTRACTING, TO PROVIDE FOR THE USE OF STATE FUNDS, TO PROVIDE FOR DISTRIBUTION OF WATER GENERATED THROUGH CLOUD SEEDING, TO PROHIBIT CERTAIN CLAIMS OF LIABILITY, AND TO PROVIDE THAT CERTAIN PERMITS SHALL NOT BE REQUIRED.

Be It Enacted by the Legislature of the State of Idaho:

SECTION 1. That Title 42, Idaho Code, be, and the same is hereby amended by the addition thereto of a NEW CHAPTER, to be known and designated as Chapter 43, Title 42, Idaho Code, and to read as follows:

CHAPTER 43

CLOUD SEEDING

42-4301. CLOUD SEEDING. (1) The legislature finds that:

(a) Idaho's economy and the welfare of its citizens depend upon a reliable and sustainable water supply. It is essential, therefore, that the state continues to identify, develop, and implement projects that augment and sustain the state's water resources.

(b) The cloud seeding program developed and implemented by the Idaho water resource board, in cooperation with interested stakeholders, presents a unique and innovative opportunity to augment and sustain the water resources of the state.

(c) Augmenting water supplies through cloud seeding is in the public interest. Public benefits of cloud seeding include drought mitigation, protection of water rights, protection of municipal and business activities dependent on water, water quality, recreation, and fish and wildlife.

(d) Data accumulated and analysis undertaken since the initiation of the cloud seeding program demonstrates that cloud seeding has resulted in an annual increase in the water supplies in the basins in which cloud seeding has been performed. However, additional research and analysis is necessary to determine the precise nature and extent of those increases. The legislature recommends that such research be continued as the cloud seeding program progresses and that annual reports on such research be provided to the legislature.

(e) The legislature recognizes that expansion of the cloud seeding program may benefit basins throughout the state that experience depleted or insufficient water supplies, and the legislature recommends that the water resource board complete an assessment of basins and work with

affected stakeholders to implement the cloud seeding program in basins that would benefit from the program.

(2) As used in this chapter, "cloud seeding" means all acts undertaken to artificially distribute or create nuclei in cloud masses for the purposes of inducing precipitation, cloud forms, or other meteorological parameters. Cloud seeding for the suppression of fog and frost prevention measures for the protection of orchards and crops are excluded from the coverage of this chapter.

(3) The water resource board shall authorize, and may sponsor or develop, local or statewide cloud seeding programs and may contract any individual or organization for consultation and assistance in developing cloud seeding programs or in furthering research related to cloud seeding.

(4) State funds may be used or expended on cloud seeding programs only in basins where the water resource board finds that existing water supplies are not sufficient to support existing water rights, water quality, recreation, or fish and wildlife uses dependent on those water supplies. Water generated through cloud seeding shall be distributed in accordance with the prior appropriation doctrine.

(5) The act of cloud seeding pursuant to a project funded in whole or in part by the state of Idaho or authorized by the state water resource board shall not be the basis of any claim of liability, including but not limited to trespass or public or private nuisance, and shall not require any state or local permits.

BEFORE THE IDAHO WATER RESOURCE BOARD

IN THE MATTER OF AQUIFER STABILIZATION AND EXPANSION OF THE CLOUD SEEDING PROGRAM	RESOLUTION TO APPROVE FUNDS FOR THE DEVELOPMENT OF A STATEWIDE ASSESSMENT AND CLOUD SEEDING PROGRAM IN THE BEAR RIVER BASIN

WHEREAS, House Bill 547, passed and approved by the 2014 legislature, allocates $5,000,000 annually from the Cigarette Tax to the Idaho Water Resource Board (IWRB) for statewide aquifer stabilization, with the funds to be deposited into the Secondary Aquifer Planning, Management, and Implementation Fund; and

WHEREAS, cloud seeding was identified as a strategy in the Eastern Snake Plain Aquifer Comprehensive Management Plan (ESPA CAMP) for which stabilization and recovery of the ESPA is a principal goal, and was identified as a strategy in the draft Treasure Valley Comprehensive Management Plan; and

WHEREAS, a well-managed cloud seeding program can increase winter snowpack as much as 10% or more, and thereby increase surface water runoff, resulting in more surface water for all uses, including aquifer management projects, and less supplemental ground water pumping; and

WHEREAS, Idaho Power Company (IPC) brought operational experience it gained from its Payette River Basin program and established a remote-operated "Pilot Program" in the Upper Snake River Basin as a result of the ESPA CAMP; and

WHEREAS, discussions between the IWRB, IPC, and other water users resulted in the creation of a collaborative Cloud Seeding Program (Program), expanding cloud seeding operations in the Upper Snake River Basin and established programs in the Boise River Basin, and Wood River Basin with support from the IWRB and local water users; and

WHEREAS, House Bill 266, passed and approved by the 2021 legislature, recognized that the Program has provided a unique and innovative opportunity to support sustainable water supplies for the State, and recommended that the IWRB complete an assessment of basins and work with affected stakeholders to implement cloud seeding projects in other basins that would benefit; and

WHEREAS, an assessment of basin-specific climatological characteristics is required to first determine if conditions amenable to cloud seeding exist in basins of interest; and

WHEREAS, concern for existing and future water supplies have prompted stakeholder interest in the development of a cloud seeding project in the Bear River Basin; and

WHEREAS, the IWRB has directed its staff to develop a pilot cloud seeding program in the Bear River basin, beginning with the cloud seeding season that runs November 2021 through April 2022 (season 2021-2022); and

WHEREAS, the National Center for Atmospheric Research (NCAR) is an independent research based organization that is well-qualified and experienced in providing climatological assessments and scientifically based program design for the development of cloud seeding programs; and

WHEREAS, in July of 2020, NCAR published a statewide climatological assessment of winter time cloud seeding potential across the State of Wyoming; and

WHEREAS, a similar assessment is recommended for the State of Idaho to provide initial mapping of regions across the state that possess conditions amenable to cloud seeding, and to serve as the foundation for further analysis and program design for specific basins of interest; and

WHEREAS, implementation of a pilot program in the Bear River Basin will require a more detailed climatological analysis, factoring weather conditions at varying elevations. The analysis will be used to develop a program design based on the type seeding equipment necessary to support conditions in the target area, and to provide estimation of the potential increase in snowpack; and

WHEREAS, NCAR estimates the costs for completing a statewide assessment to be $30,000 and proposed program design for the Bear River Basin, to be approximately $310,000; and

WHEREAS, to meet the IWRB's stated objective of initiating a pilot program in the Bear River Basin for the 2021-2022 season, the use of aircraft seeding has been identified as a practical near-term strategy;

WHEREAS, IPC, as the Program's existing operator, will procure and operate an additional aircraft for the 2021-2022 season, to be stationed out of Pocatello, ID, and dedicated to the Bear River Basin whenever seedable storms exist. IPC estimates the total cost to operate an additional aircraft to be approximately $775,000; and

WHEREAS, the Bear River Basin is adjacent to the Upper Snake River Basin where an existing aircraft program is in place, creating a potential opportunity to share infrastructure and costs between basins. When there are not seedable storms in the Bear River Basin, the additional aircraft could be used to support additional airborne seeding in the Upper Snake Basin, where IPC has identified an existing need.

NOW, THEREFORE BE IT RESOLVED that, the IWRB authorizes expenditures not to exceed $30,000 from the Secondary Aquifer Planning, Management, and Implementation Fund for costs related to the development of a statewide climatology assessment.

BE IT FURTHER RESOLVED that, the IWRB authorizes expenditures not to exceed $310,000 from the Secondary Aquifer Planning, Management, and Implementation Fund for costs related to the development of a cloud seeding program design for the Bear River Basin.

BE IT FURTHER RESOLVED that, the IWRB authorizes expenditures not to exceed $775,000 from the Secondary Aquifer Planning, Management, and Implementation Fund for costs related to the operations and maintenance of a pilot aircraft program in the Bear River Basin for the 2021-2022 season.

BE IT FURTHER RESOLVED that the IWRB authorizes its chairman or designee, Brian Patton, Executive Officer to the IWRB, to execute the necessary agreements or contracts to complete the proposed modeling effort.

DATED this 23rd day of July, 2021.

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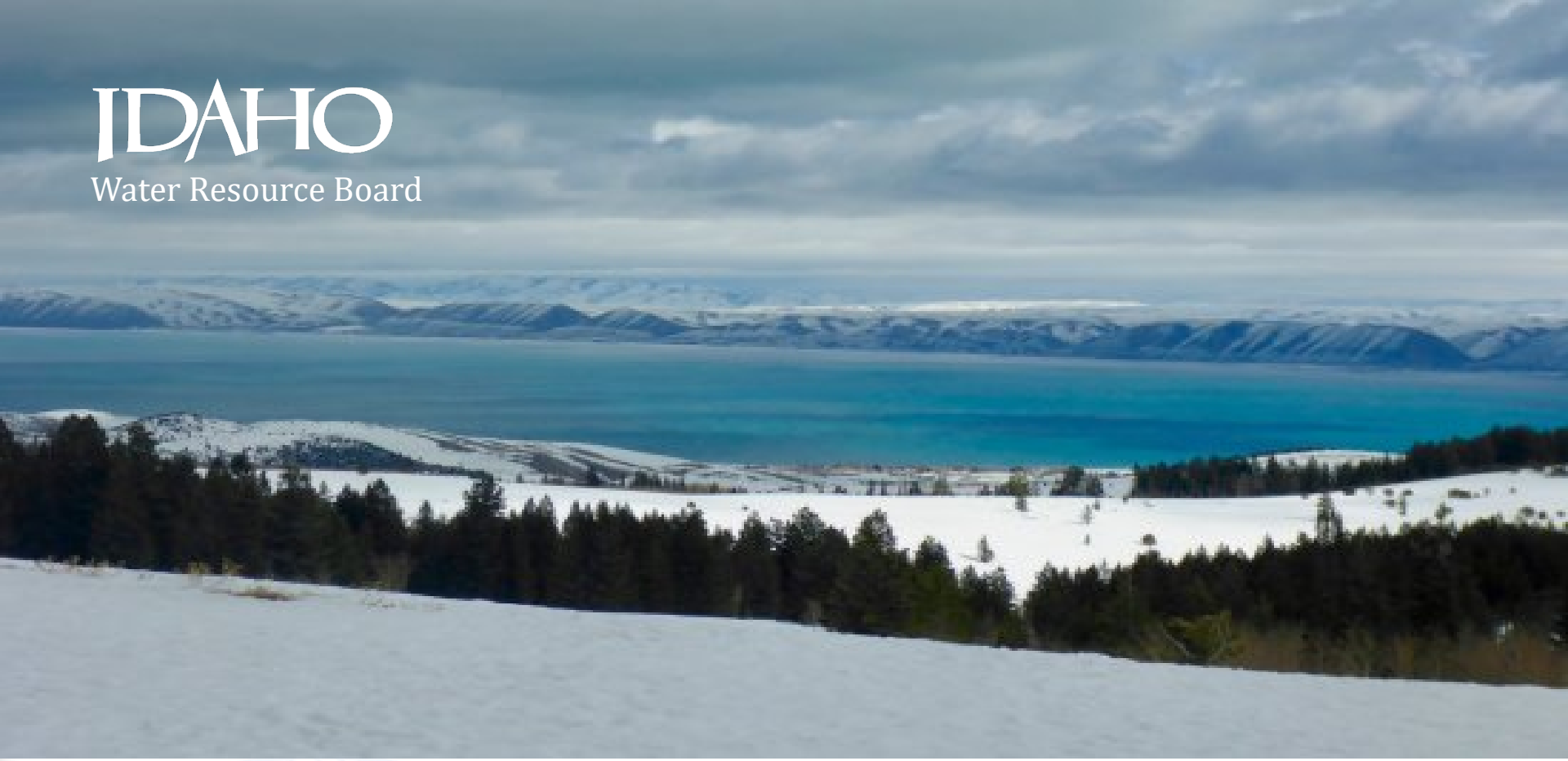
Jeff Raybould, Chairman
Idaho Water Resource Board

ATTEST _____

Jo Ann Cole-Hansen, Secretary



Cloud Seeding Program Expansion

IWRB Cloud Seeding Committee Meeting

Presented by Kala Golden

June 28, 2021

Directive

2021 Legislature passed House Bill 266

- Recognized the potential to benefit basins throughout the state by expanding the cloud seeding program
- Recommended the Board complete an assessment of potential basins and,
- Work with affected stakeholders to implement new cloud seeding projects

GOAL: Expand the Cloud Seeding Program

Objective: Complete an assessment of cloud seeding opportunities statewide, and implement a pilot cloud seeding project in the Bear River Basin beginning in the upcoming 21-22 season.

Action:

1) Statewide Climatology Assessment
2) Program Design
3) Implementation

Climatology Assessment

Do conditions exist?

- ❖ Develop statewide assessment for Idaho— NCAR
- Framework for Bear River Basin
- Use in prioritizing other basins

Timeline: <1 month
Deliverables: Statewide map, presentation of results
Cost: $30K

Climatology Assessment

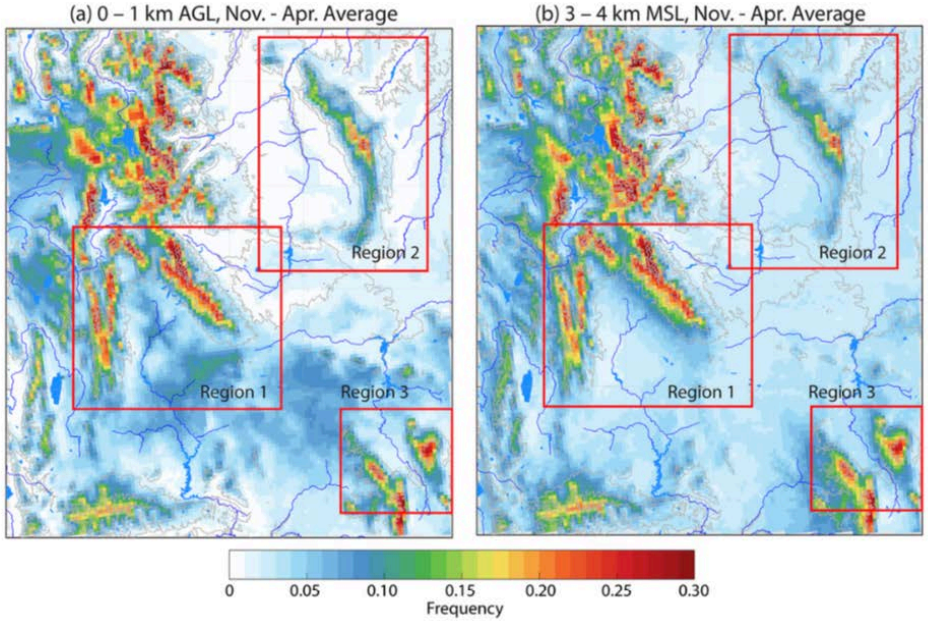


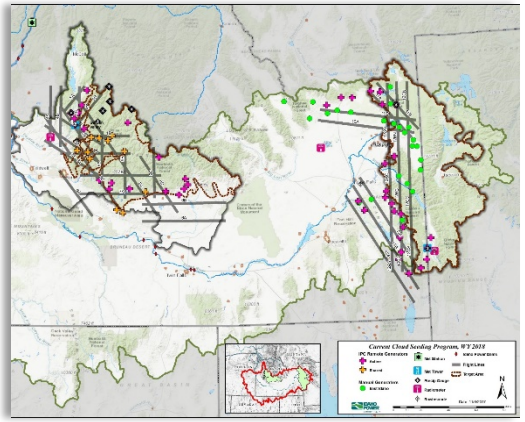
FIG. 9. Maps (covering the domain of study) of the frequency of time within the wintertime months of November–April that, on 8-yr average between 2000 and 2008, temperature and SLW cloud-seeding criteria are met in the (a) ground-seeding layer (0–1 km AGL) and (b) airborne-seeding layer (3–4 km MSL), based upon the WRF-CONUS simulation.

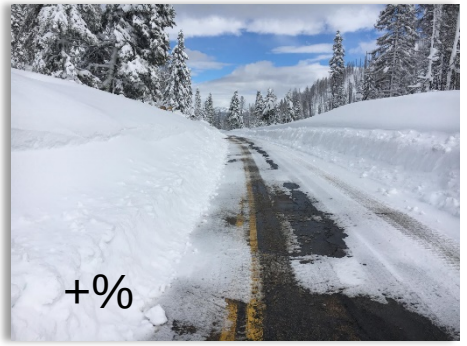
[1]Figure 9, Tessendorf et. Al (2020)

[1] Tessendorf, S.A., K. Ikeda, C. Weeks, R. Rasmussen, J. Wolff, L. Xue, 2020: An assessment of winter orographic precipitation and cloud-seeding potential in Wyoming. *J. Appl. Meteor. Climatol.*, **59**, 1217-1238.

Program Design

- Develop Program Design for Bear River Basin—NCAR
  1. Airborne seeding design, ***Priority***
  2. Ground based seeding design
  3. Evaluation of potential impacts (*Estimated % increase in snowpack)*





Timeline: 9-12 months

Deliverables: Program design for the Bear River Basin; final feasibility report

Cost: $310K

Implementation

- *Pilot aircraft program, 2021-2022*
  - Additional program aircraft
  - Dedicated to the Bear whenever seedable conditions exist
  - Potential to share aircraft with the Upper Snake River basin
  - Design complete October 2021
  - Cost: $775K
- *Ground program, 2022-2023*
  - Design complete late spring 2022
  - Ground coordination summer/early fall 2022
  - Deploy equipment by October 2022

GOAL: Expand the Cloud Seeding Program

Objective: Complete an assessment of cloud seeding opportunities statewide, and implement a pilot cloud seeding project in the Bear River Basin beginning in the upcoming 21-22 season.

Action:

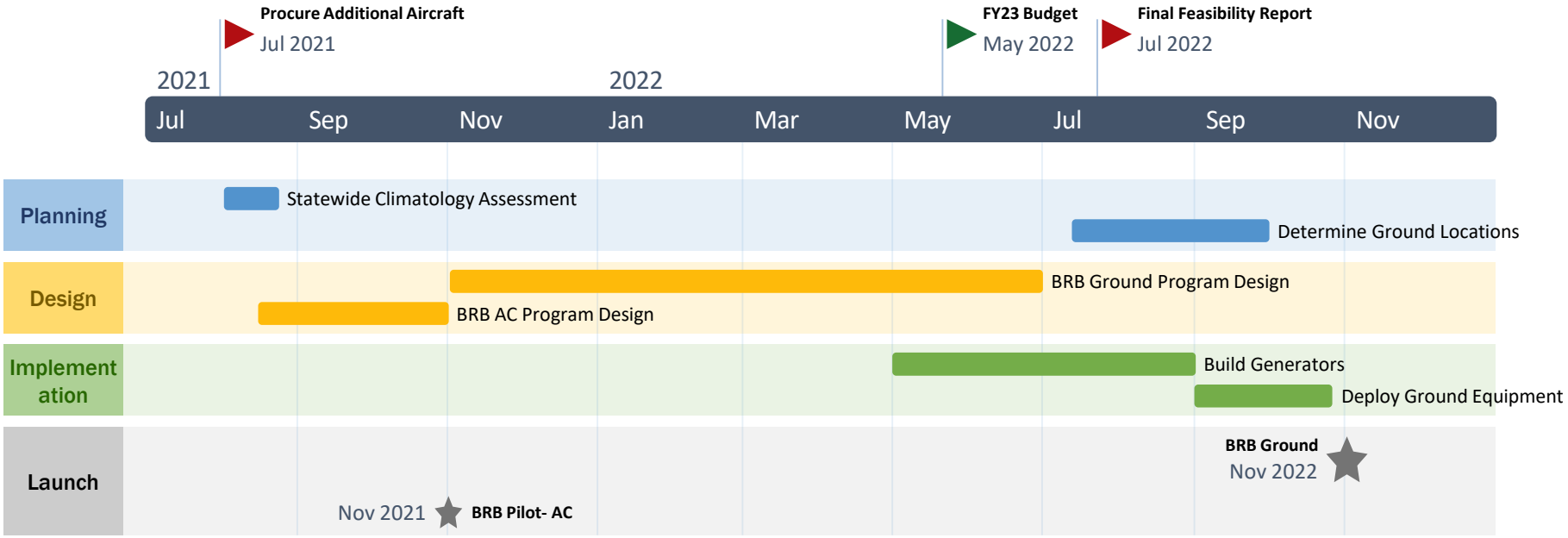
- Statewide Climatology Assessment $30K
- Program Design $310K
- Implementation $775K*

Total FY22 Budget: $1.12M

* First year cost

Cloud Seeding Program Expansion

Bear River Basin



QUESTIONS?