

EXECUTIVE SUMMARY

Item Name: **Approval of Regents' Grants Proposal #2 – Arizona's Need for a Cost-Effective Solution to Identify an Optimal Fallow Field Plan that Minimizes the Health Impact of Wind-Blown Dust (PM10) and Valley Fever**

Action Item

Requested Action: The universities and the board office ask the board for approval of its Regents' Grants Proposal for Arizona's Need for a Cost-Effective Solution to Identify an Optimal Fallow Field Plan that Minimizes the Health Impact of Wind-Blown Dust (PM10) and Valley Fever.

Background/History of Previous Board Action

Arizona law established TRIF from Proposition 301 state sales tax revenue and gives ABOR the authority to administer the fund on the universities' behalf. The board manages and administers the TRIF revenues through awarding and allocating revenues.

One of the options the board has to award TRIF revenues to the universities is through the recently developed Regents' Grant process.

The purpose of Regents' Grants is to address and deliver solutions to critical issues facing the State of Arizona and its citizens.

The board office engaged with Governor's Office, the Department of Administration, and the Department of Environmental Quality (AzDEQ), Department of Health Services (AzDHS) and Department of Water Resources (AzDWR) to develop a list of problem statements.

The universities received ADEQ's initial problem statements in November of 2021 and engaged in a Q&A session held in January to answer faculty questions regarding the problem statements. ADEQ's problems statements are:

1. Currently we do not understand how the unique southwest natural environment and potential ozone precursor sources in Arizona--nitrogen oxides (NOx), volatile organic compounds (VOCs), and biogenic volatile organic compounds (BVOCs) impact or assist in the production of ozone in Arizona. Thus, it is not clear which types of controls can be put in place or voluntary actions Arizonans can take to reduce ozone and improve air quality. Beyond the existing photochemical air

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modeling and analysis, Arizona needs a better predictive method to establish the independent and reasonably controllable variables influencing ozone in Arizona.

2. Arizona would benefit from a cost-effective solution and/or options to identify an optimal fallow field plan that minimizes wind-blown PM10 (~dust) emissions and Valley Fever spores.
3. Need cost effective technology to remediate PFAS contaminated water and need a cost-effective means to replace current AFFF supplies with a more benign but effective fire suppressant.
4. Arizona needs a comprehensive assessment identifying potentially hazardous mine features impacting surface and groundwater. Arizona needs a cost-effective solution or mitigation technology that can limit the spread of contaminants via water and air.
5. Arizona would benefit from an economic feasibility study to manage recycling by municipality size. The study should detail recycling options for Arizona and highlight pros and cons for each community size.

The universities submitted their proposals in response to the State's problem statements in February and ADEQ, AzDHS and ABOR reviewed the proposals.

Discussion

Based on the reviews of the multi-university proposals submitted in response to Problem Statement #2 regarding Arizona's need for a cost-effective solution to identify an optimal fallow field plan that minimizes the health impact of wind-blown dust (PM10) and Valley Fever.

The board is asked to review and approve for Regents' Grant Funding the following proposal in response to this problem statement:

Context:

Fallow fields, especially in arid Central Arizona, are a growing air quality concern due to an anticipated increase in water restrictions in Pinal County. West Pinal County currently has a serious issue for particles with a diameter less than 10 micrometers (PM10), commonly referred to as "dust". These small particles can get deep into lungs, and some may even get into your bloodstream. Exposure to such particles can affect both lung and heart function. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, and Valley

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Fever (one of the most commonly reported infectious diseases in Arizona).

Team:

Arizona State University: Drs. Matthew Fraser, Pierre Herckes, Jon Miller, Sean Dudley, Ferran Garcia-Pichel, Ed Kavazanjian
Northern Arizona University: Drs. Paul Keim, David Wagner, Bridget Barker
University of Arizona: Drs. Jon Chorover, John Galgiani

Proposal Summary

To deploy sustainable, bio-mediated and bio-inspired technologies in fallow fields to suppress fugitive dust formation and simultaneously maintain or improve soil fertility in a manner that is simple and eventually actionable for land managers.

Also, the three Arizona Public Universities have the key people and infrastructure needed to collect and analyze the physical, molecular, and clinical data required for a much deeper understanding of the source and transmission of Valley fever. In addition, a tangible end product of this work will be a geospatial modeling and visualization system that will serve as a prototype of a decision-making tool that will bring together a wide variety of current data on the sources of the Valley fever pathogen and its clinical impact in the state.

Why it Matters to Arizona

Blowing dust is a significant underrated hazard in Arizona with impacts across many disciplines and sectors of the economy including transportation, public health, and air quality. Exposure to such particles can affect both lung and heart function. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, and Valley Fever (one of the most commonly reported infectious diseases in Arizona).

Budget

Annual	Three-Year
\$1,433,333	\$4,300,000

Project Length

Three years.

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Committee Review and Recommendation

The Research and Health Sciences Committee reviewed this item at its March 25, 2022 meeting and recommended forwarding the item to the full board for approval.

Statutory/Policy Requirements

A.R.S. § 15-1648 “Technology and Research Initiative Fund”
ABOR Policy 3-412 “Administration of Technology and Research Initiative Fund”