

EXECUTIVE SUMMARY

Item Name: Approval of Regents' Grants Proposal #1 – Better Predictive Method to Establish the Independent and Reasonably Controllable Variables Influencing Ozone in Arizona

Action Item

Requested Action: The universities and the board office ask the board for approval of its Regents' Grants Proposal for a Better Predictive Method to Establish the Independent and Reasonably Controllable Variables Influencing Ozone in Arizona.

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 is to award TRIF revenues to the universities 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 modeling and analysis, Arizona needs a better predictive method to establish the

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EXECUTIVE SUMMARY

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 #1 regarding a better predictive method to establish the independent and reasonably controllable variables influencing ozone in Arizona, the board is asked to review and approve for Regents' Grant Funding the following proposal:

Context:

Maricopa County air quality was not sufficient to meet the EPA National Ambient Air Quality Standards for 2020. Currently Arizona does not understand how the unique southwest natural environment and potential ozone sources/precursors impact or assist in the production of ozone in Arizona. As ozone is almost never emitted directly into the atmosphere but formed from chemical reactions driven by sunlight from precursors including the nitrogen oxides and volatile organic compounds, any effective control strategy must be based on accurate precursor emission inventories. Beyond corroborating emission inventories, lowering concentrations of ozone will require reductions in emissions. However, many important emission sources are either uncontrollable (i.e. emissions from natural vegetation) or outside local regulatory control (i.e. emissions from mobile sources which are regulated at the Federal level). Thus, it is not clear which types of controls will be most efficient or voluntary actions Arizonans

EXECUTIVE SUMMARY

can take to reduce ozone and improve air quality.

Team:

Arizona State University: Drs. Matthew P. Fraser and Pierre Herckes
University of Arizona: Drs. Avelino Arellano and Armin Sorooshian,

Proposal Summary

Integrate measurements of ozone producing chemical compounds with a state-of-the-art regional air quality model and satellite products of ozone and its associated compounds to better understand, model and predict Arizona ozone concentrations. The research team will use a numerical weather prediction system with chemistry to simulate key interactive processes influencing the production and loss of ozone. A novel solutions-focused effort along addressing two key components relevant to advancing ozone mitigation: emission inventory verification and novel programs to incentivize emissions reductions from sources outside local regulatory control.

Why it Matters to Arizona

Ozone nonattainment in the area of Maricopa and Yuma Counties is affecting human health. Continued non-attainment of the health-based National Ambient Air Quality Standard (NAAQS) for ozone means that local residents are exposed to elevated pollutant levels that impact their health, including induction of respiratory symptoms, decrements in lung function, inflammation of airways. Evidence from observational studies strongly indicates that higher daily ozone concentrations are associated with increased asthma attacks, increased hospital admissions, increased daily mortality, and other markers of morbidity.

Ozone nonattainment will also create a chilling effect on economic growth if not addressed because federal standards serve to increasingly limit new emissions sources and expansion of existing sources in nonattainment areas.

Budget

Annual	3-Year
\$933,333	\$2,800,000

Project Length

Three years.

EXECUTIVE SUMMARY

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”