

# Small Business Innovation Research (SBIR)



- **Small Business Innovation Research (SBIR)**
  - Stimulate technological innovation
  - Use small businesses to meet federal R/R&D needs
  - Foster and encourage participation in technological innovation by socially and economically disadvantaged small businesses and those that are 51% owned and controlled by women
  - Increase private sector commercialization of innovations derived from federal R/R&D
- **Small Business Technology Transfer (STTR)**
  - Stimulate and foster scientific and technological innovation through cooperative research and development carried out between small businesses and research institutions
  - Foster technology transfer between small business concerns and research institutions.

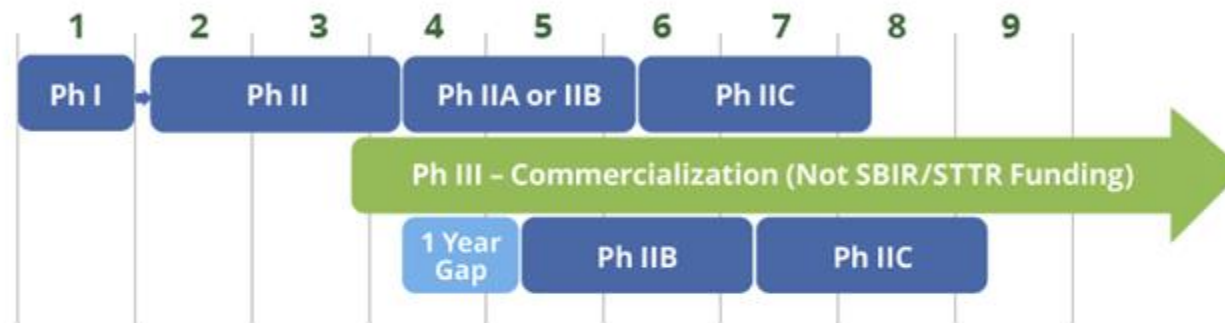
# Background

- Topics are dictated by DOE (ARM/ASR managers included)
  - Has been used to address specific program needs
    - Aerodyne AMS and CAPS-based instrumentation
    - Prosensing GVR
    - Radiometrics MWRP
- Most recent topic:
  - Urban Measurement Technology



## SBIR and STTR Have Three Distinct Phases

### About Our Grants



Phase I	Phase II/IIA/IIB/IIC	Phase III
Feasibility/Proof of concept	Prototyping & Demonstration	Not SBIR funding
6 to 12 months in duration	Up to 2 years in duration	Work that derives from, extends or completes the effort of prior Phase I and II awards
Awards up to \$200,000 or \$250,000	Awards up to \$1.1M or \$1.6M (Phase II Only)	Pursuit of commercialization
	Pursuit of commercialization	<a href="#">Read More</a>

# ARM's Engagement with SBIRs

- ARM provides critical infrastructure and data that can be utilized by SBIRs to develop and validate technologies
  - ARM has hosted a number of SBIR guest instruments in the past
  - Not just DOE SBIRs but could be NASA or DOD as well
- 2022 ARM/ASR PI Meeting: New and Emerging Technologies Breakout
  - Goal is to review new technologies that ARM could further invest in to deploy
    - Procurement of a new system
    - Effort to make a system field deployable

RESEARCH > CAMPAIGNS  
**VISVALIDATION**  
FIELD VALIDATION OF CLOUD PROPERTIES SENSOR  
1 MARCH 2020 - 31 MAY 2024  
LEAD SCIENTIST: STEPHEN JONES  
OBSERVATORY: SGP, SGP

[BROWSE DATA](#)





# Additional Engagement Resources

- U.S. Department of Energy's Office of Technology Transitions Voucher Call
  - Provides up to 21 teams a voucher up to \$100,000 to be redeemed at one of 8 National Laboratories
    - National Renewable Energy Laboratory
    - Sandia National Laboratories
    - Pacific Northwest National Laboratory
    - Los Alamos National Laboratory
    - Ames National Laboratory
    - Lawrence Berkeley National Laboratory
    - Argonne National Laboratory
    - Oak Ridge National Laboratory



# Subset of Recent Awardees



Company	Project Title	Project Summary
Aerosol Dynamics Inc.	Instantaneous Aerosol Mobility Sizing	Airborne particles strongly affect human health in urban environments; and they influence climate on both regional and global scales. This project will provide a new method to characterize the critical parameters of the particle size and concentration with high time resolution.
CloudSci	A low-cost holographic sensor for urban aerosol characterization	Our project develops a groundbreaking sensor for measuring large atmospheric particles, including dust and pollen, in urban areas. The technology promises significant advancements in understanding urban air quality and climate and could serve as a valuable tool for improving human health and agricultural production.
Nikira Labs Inc.	Mobile Urban Aerosol Composition using a Robust Multi-pass Cell and Mid-infrared Fingerprint Region Spectroscopy	Atmospheric particulate matter (PM) in urban environments can cause significant negative health impacts and currently available instrumentation cannot measure PM with sufficient spatial resolution to ensure equitable reduction in neighborhood level exposures. Nikira Labs is developing a small, ultra-sensitive and mobile analyzer capable of characterizing the composition of urban PM at the city block scale to aid in attribution and mitigation of these harmful emissions.
Aerosol Dynamics Inc.	Coupled Aerodynamic and Optical Sizing for Coarse Particles	The particulate matter suspended in our atmosphere is known to affect health when inhaled, and to affect the formation of clouds aloft. This project will develop a compact, affordable sensor to assess the abundance of those particles in our communities in real time.
CloudSci	A low-cost, networkable fluorescence spectrometer for automatic identification of pollen and other coarse mode aerosols found in urban environments	Pollen is a significant public health concern, impacting millions with allergies and respiratory issues, while its accurate measurement informs us about air quality and climate. This project aims to create an innovative, low-cost sensor network that detects and analyzes airborne pollen in real-time. The technology will improve public health alerts and guide environmental policy, addressing an area of concern that merits Department of Energy funding for its implications on air quality and climate change.
IONICSCALE LLC	Small-footprint mass spectrometry based chemical sensors for urban monitoring	Mass spectrometers are widely used for chemical analysis to detect and identify environmental pollutants, toxic industrial chemicals, chemical and biological weapons, illicit drugs, explosives, and more, but their high cost, size, weight, and power, however, severely limit their utility in deployment outside the lab. This project will develop more efficient ionization systems that will pair to load our novel, patented, mass analyzer and will allow for low cost, size, weight, and power sensors that could act as remote, autonomous chemical analyzers with laboratory grade performance.

# Path Forward



- ARM will continue to serve as a resource for SBIR
- Interest in continuing a breakout series at the ARM/ASR PI meeting?
- For SBIR recipients in the room, would it be beneficial for someone from ARM to reach out and engage in phase 1 or 2 on what ARM can be utilized for?



# Questions?