



Phase II Announcement – August 2016 Frequently Asked Questions

What is the Nutrient Recycling Challenge, and what is it looking for?

In 2015, the U.S. Environmental Protection Agency (EPA) partnered with pork and dairy producers, the U.S. Department of Agriculture (USDA), and environmental and scientific experts to launch the Nutrient Recycling Challenge, a competition to find affordable technologies that can extract valuable nutrients (nitrogen and/or phosphorus) from dairy or pork manure and concentrate them into a usable or marketable form. The challenge is comprised of four-phases, in which innovators will turn their concepts into designs and eventually into working technologies that livestock farms can use in pilot projects. The Partners will be looking for transformative ideas that either improve upon existing technologies or recycle nutrients in an entirely new way.

Why is EPA interested in nutrient recovery technologies?

EPA encourages the development of technologies that would be a win-win for the environment, farmers and the economy. Nutrient recovery technologies have the potential to offer environmental benefits, such as improved water quality and reductions in greenhouse gas emissions. Nutrient recovery can also provide animal agriculture producers with a product they can use or sell. Producers would be incentivized to adopt these technologies if they made economic sense, and if they could convert manure into fertilizers that are more usable and lightweight, and therefore more marketable.

Why are farmers interested in nutrient recovery technologies?

Because of its weight, wet manure and the nutrients it contains can be difficult and costly to manage and transport. Nutrient recovery technologies could offset producers' costs by extracting and/or transforming the nutrients in manure into products that could be used onsite, transferred or sold.

Why is EPA hosting an innovation challenge to find nutrient recovery technologies?

Scientists and engineers are already developing technologies that can recover significant percentages of nitrogen and phosphorus from manure for beneficial uses, but these technologies are not, as yet, economically feasible, and the markets for the products they yield are immature or non-existent. More development is needed so the technologies can generate the products that the market is calling for. Innovation challenges and competitions are a way to find solutions by tapping into the ingenuity and creativity of innovators across the globe.

Why should innovators be interested in developing solutions for nutrient recovery?

With over a billion tons of manure managed by livestock producers across the country each year, the potential market and environmental benefits could be tremendous. For more information on the pork and dairy industries, see the document, "[Background Information on Nutrient Recovery Technologies and Pork and Dairy Production](https://www.challenge.gov/files/2015/10/Nutrient-Recycling-Challenge_Background_508_Final.pdf)" (https://www.challenge.gov/files/2015/10/Nutrient-Recycling-Challenge_Background_508_Final.pdf)

Why is the Nutrient Recycling Challenge focused on pork and dairy producers? Couldn't other types of animal agriculture benefit from nutrient recovery technologies?

This challenge is initially focused on the dairy and pork industries because the manure generated at these livestock farms is typically wet. Wet manure is handled differently than manure from other livestock sectors; therefore, it makes sense to work with the dairy and swine sectors simultaneously to find potentially common solutions. Also, considerable research already exists on nutrient recovery technologies for dairy and swine manure. Although the initial scope of the Nutrient Recycling Challenge is focused on pork and dairy industries, it could be expanded to include other sectors in the future.

What are the four phases of the challenge?

Phase I was a prize competition which called for Concept Papers, and was open from November 16, 2015 – January 15, 2016. Phase II will be focused on development of Technology Designs, and will be offered as a non-competitive incubation program from October 2016 – March 2017. Phase III is expected to launch in 2017 as a prize competition for building of Prototypes of Phase II designs, and the plan for Phase IV is to develop demonstration pilots on farms with finalists from Phase III.

What will be required of innovators in Phase II of the challenge?

EPA and its Partners will offer support to innovators who will develop Technology Designs based on the Concept Papers they submitted in Phase I. The Technology Designs will be expected to be “engineering blueprints” which provide details about how technologies would be built from the basic concepts outlined in Phase I, and illustrate how technologies would work in real-life production systems. Costs, potential markets for co-products, and potential scalability will also be elements required for the technology designs. Data and documentation to support assumptions and hypothesis will be required.

EPA and its Partners will announce the details and schedule for Phase II in September 2016, begin offering the incubation program in October 2016, and announce the requirements for Technology Designs shortly thereafter. Participants may modify their teams during Phase II. Innovators will have until March 2017 to submit Technology Designs and finalize their teams, as a requirement for entering Phase III.

Is participation in the Phase II program mandatory for participants to continue in the challenge?

Participation in the offerings of the Phase II incubation program will be voluntary for participants. This program is intended to be a resource to help innovators prepare their designs. Innovators can choose which program aspects are most relevant or useful for them. However, challenge participants who wish to enter Phase III will be required to submit a Technology Design and finalize their teams by the end of Phase II, in March 2017.

Can new participants enter Phase II of the challenge?

No, Phase II will be open only to the 34 innovator teams who were selected to proceed based on their Phase I submissions.

Why isn't Phase II a prize competition?

At the summit in March after Phase I, EPA heard from innovators that they would benefit from access to additional information on: what would work on real-world operations; waste stream composition and manure management systems; considerations for assessing capital and operations & maintenance costs; and on-farm

manure management costs that could impact opportunities for returns on investment in new technologies. Further, the 34 concepts invited to proceed are diverse with respect to their stages of development, and innovators may require differing levels of support based on their current stage of development. Therefore, we recognize that providing mentorship and incubation support to innovators to refine their concepts at this stage (rather than a competition framework) would maximize the potential for innovators to develop technologies that could successfully meet the needs of the market. The challenge is expected to return to a prize competition format in Phase III (building of prototypes).

Will funding be provided to contestants build their designs and prototypes?

EPA will not be providing financial funding to challenge participants in the Phase II program. However, EPA and its Partners will be providing in-kind incubation, expertise, and technical support to participants for development of their technology designs. Additionally, EPA and its Partners have been connecting participants to information about federal grant and financial assistance programs that are available for the development of nutrient recovery technologies, including [Small Business Innovation Research/Small Business Technology Transfer grants](http://www.sbir.gov) (www.sbir.gov), [USDA's Conservation Innovation Grants](http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/cig/) (www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/cig/), and [USDA's Rural Development grants](http://www.rd.usda.gov/programs-services/rural-business-development-grants) (www.rd.usda.gov/programs-services/rural-business-development-grants).

What can participants expect for Phase III and IV of the challenge?

Phase III is expected to be a prize competition, in which innovators will build and test prototypes of their technologies for cash prizes and other incentives, such as opportunities to meet with potential investors, free access to lab and testing facilities, and potential offers of demonstration pilots on farms in Phase IV. The criteria for Phases III and IV will be announced when those Phases begin.

How does EPA select winners in the Nutrient Recycling Challenge?

In Phase I of the Nutrient Recycling Challenge, EPA and its partners developed criteria that reflected the diversity of characteristics desired in nutrient recovery technologies for pork and dairy farms of various types. EPA established a volunteer [judging panel](https://www.challenge.gov/files/2015/10/Nutrient-Recycling-Challenge_Phase-1_Planning-Cmte-Judges-1.pdf) with over 30 government, industry, and academic experts (https://www.challenge.gov/files/2015/10/Nutrient-Recycling-Challenge_Phase-1_Planning-Cmte-Judges-1.pdf) which provided input for EPA's winner selections per the criteria listed in the [Competition Information, Criteria, and Guidelines](https://www.challenge.gov/files/2015/10/Nutrient-Recycling-Challenge-Competition-Information-Criteria-and-Guidelines.pdf) document for Phase I (https://www.challenge.gov/files/2015/10/Nutrient-Recycling-Challenge-Competition-Information-Criteria-and-Guidelines.pdf).

There will be no "winner" selection in Phase II, however, Technology Designs will need to meet general guidelines for submissions which will be announced. The criteria for Phases III and IV will be announced when those Phases begin.

How is this challenge related to innovation around anaerobic digesters?

While the primary focus of the challenge is technologies that recover nutrients, nutrient recovery technologies sometimes accompany digesters. The biogas industry has been exploring new ways to derive and market value-added products from organics, including manure, to improve the overall economics of biogas projects. This challenge includes criteria for compatibility with other systems that currently exist on livestock operations (including digesters) as desirable characteristics, and allows for submitters to note whether their technology would be suitable for use with digestate.