COUNCIL ACTION FORM

SUBJECT: ARANET ADVANCED WIRELESS RESEARCH PROPOSAL

BACKGROUND:

Iowa State University is preparing a proposal entitled "AraNet: Wireless Living Lab for Smart and Connected Rural Communities" for submittal to the national Platforms for Advanced Wireless Research (PAWR) program (https://www.advancedwireless.org/). It is believed this program is the first of its kind, globally. The envisioned network will enable trustworthy, ultra-high reliability, and ultra-low latency (TURL) wireless communication to provide transformative applications in various domains such as agriculture, rural education, transportation, power grid, public safety, municipal services, and manufacturing.

ISU submitted a similar proposal in 2018. That proposal was short-listed as one of the very few finalists but ultimately was not selected for funding. The proposing team has been strongly encouraged to refine and resubmit its proposal. Research staff has consulted with the grant review team and has made a number of updates to the proposal from last year. These include having a sharp focus on topics critical to the rural communities (e.g., agriculture and rural education), refining the engineering and execution details of the project, and refining the management plan and sustainability plan.

The PAWR program is intended for university-city-industry proposals and includes $100,000,000 to award between four projects; three having been funded and one more to be funded in 2020, with a special focus on rural broadband. The program is sponsored by the National Science Foundation (NSF) and funded equally between NSF and a group of industry partners.

AraNet would provide a wireless network platform across ISU, Ames, Nevada, and other surrounding rural cities/communities and farms. **It must be emphasized that this network is not intended as an internet service provider for individual customers, but rather to provide a platform for a "living lab" for wireless research related to municipal services.** Potential city-service related research could include projects such as:

- AR/VR-based agricultural education
- Communication for traffic adaptive signal corridors
- Snow and ice control monitoring and planning for routes and conditions
- Mobile data and communication for public safety
- Continuous data gathering by CyRide and police
- Electric service and usage monitoring
- At-home tele-medicine monitoring and treatment applications

The proposal does not require any financial commitment from the City for the development and deployment of the network. In fact, the proposal requirements prohibit providing any funds. However, the City is being asked to allow the network infrastructure in the right-of-way and cooperate in finding appropriate locations for transmission equipment on electric poles, street lights and traffic signals.

The first five years of installation, development, deployment, operation and management would be entirely funded by the NSF grant. Following that period, the City is being asked to provide representation on an AraNet Consortium controlling board and on operational working groups. The City would also provide advice to the Consortium on developing strategies for the long-term viability for the AraNet system. Additionally, a portion of the bandwidth of the network would be dedicated to the City as a living lab for providing municipal services.

The proposal submission is due by December 13, 2019. As part of the submittal, a support letter from the City is required and is attached. A small group of proposals will be selected as finalists by February 2020. NSF will then conduct site visits of those locations around March 2020. The winning projects will be announced in summer 2020.

<u>**ALTERNATIVES**</u>**:**

1. Authorize the Mayor to submit the attached letter of support and commit to the six points outlined in the letter.

2. Decline to support the proposal and do not participate in any research associated with the "living lab."

<u>**MANAGER'S RECOMMENDED ACTION**</u>**:**

The AraNet proposal is an exciting opportunity for the City, ISU, and the region. It provides a platform for cutting edge research and applications in many different domains such as public safety, transportation, power grid, municipal services, agriculture, and manufacturing. Specifically, as a local government, it provides opportunities to test and refine innovative approaches to city services utilizing wireless applications. It also provides the potential to engage in on-going demonstration projects on this innovative platform.

Therefore, it is the recommendation of the City Manager that the City Council adopt Alternative No. 1, as noted above.

November 25, 2019

PAWR Project Office (PPO)
NSF Platforms for Advanced Wireless Research Program

RE: AraNet: Wireless Living Lab for Smart and Connected Rural Communities

Dear Colleagues of the PPO and Proposal Review Panel:

The City of Ames is pleased to support the enclosed proposal to establish the advanced wireless network living lab AraNet. The City of Ames, Iowa, located in Story County, is a progressive, urban community situated between denser urban/suburban populations (e.g. Des Moines, Iowa metro area) and rural communities and small towns (e.g. Nevada, Iowa, and Boone, Iowa).

Ames is the home of the Iowa State University of Science and Technology (ISU); the USDA National Laboratory of Agriculture and the Environment; the USDA National Animal Disease Center; the Department of Energy's Ames National Lab and Critical Materials Institute; a regional office of the Federal Highway Administration; the State of Iowa's Department of Transportation; a large, regional, city-owned hospital; and a regional, physician-owned, multi-specialty clinic. Furthermore, we have a rich history of successful partnerships among these various governmental entities within our community which will assure the ongoing success of AraNet.

What is particularly exciting to the City of Ames is the opportunity to apply the findings from the research developed in the living lab to ongoing demonstration projects related to our school district and city services. In this way, the City of Ames can show to the world how the research findings can be practically implemented by governmental organizations to improve services to their citizens.

If the AraNet proposal is selected for funding, the City of Ames will:

- Cooperate with ISU, other governmental agencies, and industry partners involved to form an administrative board (Consortium) and to develop a framework for the

- deployment, operation, and management of the AraNet living lab. This includes providing active representation to the AraNet Consortium and working groups;

- Make various City departments (e.g., Public Works, Electric Services, Police, Finance/IT) available to advise the AraNet team regarding the design and execution of applied research derived from AraNet that is consistent with City Council goals (e.g., innovative applications in education, transportation, public safety, and non-critical power services);

- Make available City right-of-way, infrastructures, and facilities (e.g., power supply, poles, street lights, traffic signals, Ames Municipal Airport, buses, and police cars) to deploy and operate the AraNet infrastructure;

- Expedite any City permitting processes necessary for the AraNet infrastructure;

- Work with AraNet to facilitate community stakeholder involvement in projects: for instance, smart agriculture, smart transportation, smart grid, advanced manufacturing, and public safety; and,

- Assist the AraNet Consortium in its attempt to develop strategies for the long-term viability of the AraNet living lab after the five-year NSF funding period.

Good luck with your selection process and thank you very much for considering the AraNet proposal.

Sincerely,

John A. Haila
Mayor City of Ames, Iowa