



Memorandum

Date: August 9, 2023

To: Honorable Mayor and Councilmembers

Via: Barbara Hernandez
City Manager

From: Carlos Arroyo
Public Works Director

Subject: **XYGO 3D Digital Twin Model Pilot Program**

Introduction

This memorandum provides the Public Works Department's (PWD) recommendation for the Mayor and the City Councilmembers to authorize the City Manager to enter into Professional Services Agreement with XYGO USA Corp. for a one (1) year pilot program to provide a 3D digital twin model of the City's right-of-way which will allow the Department to digitally identify, analyze, and manage right-of-way anomalies. In addition, staff respectfully requests authorization for the City Manager to transfer \$100,000.00 from the Public Works Department Fund – "Improvement Street" Account (Account Num. 001.80005.500633) to the Public Works Department Fund – "Contractual Services – Other" Account (Account Num. 001.80005.500340), to provide sufficient funding for this request.

Background

The Public Works Department (PWD) is continuously looking for ways to improve services, efficiency and proactiveness to provide the best possible level of service to the community.

In December 2021, XYGO approached the Public Works Department (PWD) to offer their services for a complete 3D digital twin survey package that would allow for the detection, quantification, and measurements of right-of-way anomalies through a Digital Twin – Point Cloud Analysis, which can provide measurements of up to 2 cm of accuracy. These services allow for an automated survey and analysis of the public right-of-way and the creation of a GIS based 3D

model of the environment through Lidar technology. The data and information acquired is used for the issuance of work orders through the XYGO system that helps organize, schedule, track, and budget to address the identified anomalies.

After a long analysis, which included multiple meetings with various departments, and final product samples demonstrating XYGO's capacity; the services provided by XYGO were vetted through the PWD, the IT Department, and the Procurement Division. The PWD requested a proposal from XYGO to implement a pilot program for the services mentioned.

If approved by the City Council, the proposed services will include the development of a 3D digital twin model applied to the detection of cracks and unevenness along the ground, specifically along the sidewalks, that result from tree roots intrusion and/or other causes. The digital twin model is created through a survey performed with lidar sensors, 360 degrees high resolution images, and the Digital Twin platform for its detection and analysis. The Digital Twin platform can also be used to carry out other inspections in a systematic and automated way, such as determining street lighting that is in poor condition or is not working and creating a street sign inventory. Additionally, the Digital Twin platform and Data Model will be used to update and add new data to the City's GIS Database. These services also support the City's Smart Cities initiatives. It should be noted that the data obtained will be owned by the City and will be stored and managed in XYGO's cloud based system. This program will allow the PWD to proactively identify, record, analyze, and address potential tripping hazards along the public sidewalks without the having the need to walk the entire City's infrastructure. The program will allow for a more proactive approach rather than a reactive one.

The PWD and XYGO negotiated the attached proposal in a per center-line mile basis. The proposal includes a one-time setup fee of \$12,000.00, a one-time optional fee of \$39,250.00 to create a Citywide signal inventory, and a cost of \$465.58 per center-line mile. The estimated center-line miles operated by the City totals approximately 83 miles. The total cost for these services should not exceed \$100,000.00. It should be noted that the PWD intends to issue a survey work order per City section to identify anomalies and address them. At no point a work order will be issued without addressing first the anomalies identified in the previous work order.

Procurement

XYGO was identified by the PWD as the desired provided for a 3D Digital Twin Pilot Program on the basis of the company's sole source service, and unique experience and capacity, and their ability to implement the service in a short time frame. It should be noted that XYGO has extensive experience in South and Central America and is currently entering the United State market. XYGO partners with ESRI which is the world's leading supplier of GIS software, web GIS and geodatabase management applications.

It should also be noted that XYGO was added to the Research Park at Florida Atlantic University's® entrepreneur support initiative for technology companies, Global Ventures, as part of its six new innovative, high-growth clients during the first quarter of 2022. Global Ventures focuses on assisting second-stage technology companies with six or more employees and

approximately \$1 million annual revenue, to achieve the next level of growth by providing direct connections to Florida Atlantic University researchers and students, market entry and research assistance, business and cultural training, talent sourcing and more to strengthen and diversify the economic base of Palm Beach and Broward counties.

XYGO prepared the attached proposal in a work order basis that includes one-time setup fee of \$12,000.00, a one-time optional fee of \$39,250.00 to create a Citywide signal inventory, and a cost of \$465.58 per center-line mile. The total cost of these services shall not exceed \$100,000.00. Please also see attached the Professional Services Agreement (PSA) draft, and the sole source letter.

Fiscal Impact

The fiscal impact associated with the implementation of the Digital Twin model pilot program is \$100,000.00.

Recommendation

The City Manager's Office respectfully requests authorization from the Mayor and City Councilmembers to waive the competitive bid process and enter into Professional Service Agreement with XYGO USA Corp. to provide 3D Digital Twin Model services in a not to exceed amount of \$100,000.00, for a one (1) year pilot program.

In addition, the City Manager's Office respectfully requests authorization to transfer \$100,000.00 from the Public Works Department Fund – "Improvement Street" Account, Account Num. 001.80005.500633, to the Public Works Department Fund – "Contractual Services – Other" Account, Account Num. 001.80005.500340, to provide sufficient funding for this request.