



Council Agenda Report

To: Mayor Silverstein and the Honorable Members of the City Council

Prepared by: Nadia Fahoum, Assistant Civil Engineer

Reviewed by: Robert Duboux, Public Works Director/City Engineer

Approved by: Steve McClary, City Manager

Date prepared: June 14, 2023 Meeting date: September 11, 2023

Subject: Outdoor Warning Sirens System

RECOMMENDED ACTION: 1) Receive a presentation on outdoor warning sirens; and 2) Provide directions to staff regarding the implementation of an outdoor warning system.

FISCAL IMPACT: Funding for the design of this project is included in the Adopted Budget for FY 2023-24 in Account No. 102-9219-5100 (Outdoor Warning Sirens - Design). The City was awarded funding through the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Grant Program (HMGP) for the design and environmental compliance of an outdoor warning siren system. The grant was awarded in the amount of \$951,633. The HMGP grant program requires a local funding match of at least 25% from the City, or \$237,908.

The total project costs, including the installation of a siren system, is estimated to be \$2,728,000. Since the project grant only contributes \$951,663, additional funding is required to construct a siren system.

Funding		Estimated Costs	
Federal Match (75%)	\$713,755	Design Services	\$198,000
City match (25%)	\$237,908	Pilot Phase	\$30,000
		Construction/Installation (32 Sirens)	\$2,500,000
Total HMGP Amount	\$951,663	Total	\$2,728,000

Funding Shortfall \$1,776,367

Additional funding for this project could be obtained by seeking further grants or by additional appropriations from the General Fund undesignated reserve. The total amount of additional funds, if any, will be dependent upon which design alternative is selected.

WORK PLAN: This item was included as item 1.h. in the Adopted Work Plan for FY 2022-23. Staff continue to work on ongoing projects and normal business while the FY 2023-24 Work Plan is finalized.

DISCUSSION: On November 12, 2018, the President declared the Woolsey Fire a major disaster, making federal disaster aid available to Los Angeles, Ventura, and Butte County. In addition to the federal disaster funding for emergency response and repair, FEMA offered their HMGP that assists in implementing long-term hazard mitigation planning and projects to prevent or mitigate future disasters.

In the aftermath of the Woolsey Fire, the City pursued a variety of grant opportunities to secure funding for emergency preparedness, including improvements to emergency communications. The City also submitted a HMGP grant application for emergency sirens. On February 5, 2021, the City was awarded the HGMP grant for the design of an outdoor warning siren system.

In December 2019, the City contracted with Mission Critical Partners to conduct a siren sound study to determine the optimum quantity and locations for an effective alerting system. A siren alerting system is an outdoor warning system designed to alert the public of an event or possible event, depending on how it is utilized. While there may be instances where someone will hear a siren indoors, depending on the construction of the building, location, and distance from the siren, siren systems are primarily for outdoor alerting. Indoor notification is not guaranteed but is available through various other technologies. Sirens are just one tool used in a comprehensive public safety alerting strategy and complement other alerting tools such as reverse 911 systems and wireless emergency alerts.

The study by Mission Critical Partners was completed in June 2020 and presented to the Public Safety Commission for a recommendation on August 5, 2020. The Commission recommended that an item be brought back as soon as possible with other options to consider as alternatives to sirens for alerting the community and visitors of a fire or other impending disaster threat with a specific focus on nighttime warnings.

At the November 9, 2020, Council meeting, Council received a presentation of the Siren Feasibility Report from Mission Critical Partners and directed staff to move forward with Option 2 (20 sites, Mix of High and Low Power Sirens) and to collaborate with the County of Los Angeles and Las Virgenes-Malibu Council of Governments.

On April 29, 2021, the City issued a Request for Qualifications/Proposals (RFQ/P) for engineering design services for the Outdoor Warning Sirens Systems project. On November 22, 2021, the City entered into a Professional Services Agreement with Acoustic Technology Inc. (ATI) to provide engineering design services for the Outdoor Warning Sirens project. This agreement included an initial task of using computerized modeling systems, and field verification to evaluate specific locations for the proposed sirens.

In March 2022, a preliminary speaker orientation and placement using available information on topography, buildings, etc. to propose optimal coverage using a computer model was provided to the City. The preliminary design proposed 32 total sirens throughout the City to provide adequate acoustic coverage. The sirens were proposed to be installed within the City, County, or State property. The typical pole height of the sirens proposed was estimated to be 50 feet. The total cost of the proposed permanent siren system was estimated to be \$2,500,000.

In 2022, the Outdoor Warning Sirens Steering Committee was formed to provide support and oversight to the project. The preliminary design was presented to the Steering Committee, and the Committee provided input on the design. The Steering Committee raised concern that the proposed design of 32 sirens of 50-foot poles and eight speakers may yield little support from the community. Through discussions with Acoustic Technology Inc., it was determined permanent sirens could be modified and reduced to 30 feet in height producing similar acoustic coverage.

Based upon the input from the Steering Committee and the Public Safety Commission, staff developed the following design alternatives for this project:

Alternative 1 – Pilot Phase

This design alternative includes the temporary installation of siren poles at various locations within the City. ATI, the City's design consultant, can deploy temporary sirens on a trailer mounted system. The siren poles will have four speakers and will be 30 feet in height. The pilot program will be deployed at eight locations within the City over a couple of days and, weather permitting, within different environmental conditions. The eight locations were identified by high risk, high volume, fire prone regions, and areas that experienced limited notification. Each test location would require a temporary use permit (TUP) from the Planning Department for a two-week trial period. It was recommended to deploy the temporary sirens during high wind events similar to what is expected during a Santa Ana wind event. This will allow the public to witness in real time the implementation of the sirens. The pilot phase would not require additional funding and the final cost of a pilot phase would be determined by the number of deployable sirens to be rented. At the completion of the pilot phase, staff will present data and comments from the community to the Commissions for further recommendations.

Alternative 2 – Siren Permanent Installation

This alternative would include the installation of the 32 recommended sirens throughout the City. The height of the permanent sirens can range from 30 feet to 50 feet poles and would require separate Coastal Development Permits. The method of communication with the siren includes radios, IP ethernet, fiber optics, cellular modem, satellite modem, and microwave. In the event of power loss, the siren batteries provide a full week of standby time followed by at least 30 minutes of continuous activation. The current agreement with ATI includes the completion of the design services for these permanent poles. However, the construction and installation of the sirens and system would require additional funding of \$1,776,367.

Alternative 3 – Phased Siren Permanent Installation

This alternative includes a phased installation of permanent sirens, beginning with the locations that have been identified as high risk. The height of the permanent sirens can range from 30- to 50-foot poles. The construction and installation of the sirens and system would require additional funding and the final amount would be determined by the number of sirens to be installed.

Alternative 4 – Indoor Notification Systems

As an alternative to outdoor warning sirens, Council may elect to explore the implementation of indoor notification systems. These types of systems can send alerts and messages to recipients who have receiver devices located inside their home or business. These alerts can include National Weather Service weather warnings, evacuation instructions, Amber Alerts, school closings, and other alerts generated by the City. Alert FM, a type of indoor notification system, can transmit information over a radio network in areas with good coverage. These devices can be installed inside the home and connected to continuous power via a USB connection. The devices have battery backup systems (AA-sized batteries) that can keep the device operational for 4 weeks without external power. Alert FM also has the capability of sending alerts and messaging via email and text. This type of system has been shown to be effective even during power, cellular, and network outages. Butte County and Shasta County have implemented similar systems.

On May 3, 2023, staff presented siren design alternatives to the Public Works and Public Safety Commissions. The outdoor siren alternatives were discussed as well as implementing a pilot program. The commissions also discussed the option of implementing an indoor warning system. At the conclusion of the meeting, the Public Works and Public Safety Commissions recommend implementing Alternative 1 – Pilot Phase, a trial program of the siren system.

Staff is seeking direction from City Council regarding the implementation of an outdoor warning system.

ATTACHMENTS:

1. Temporary Deployable Sirens
2. Pilot Testing Locations
3. Permanent Sirens
4. Permanent Sirens Locations

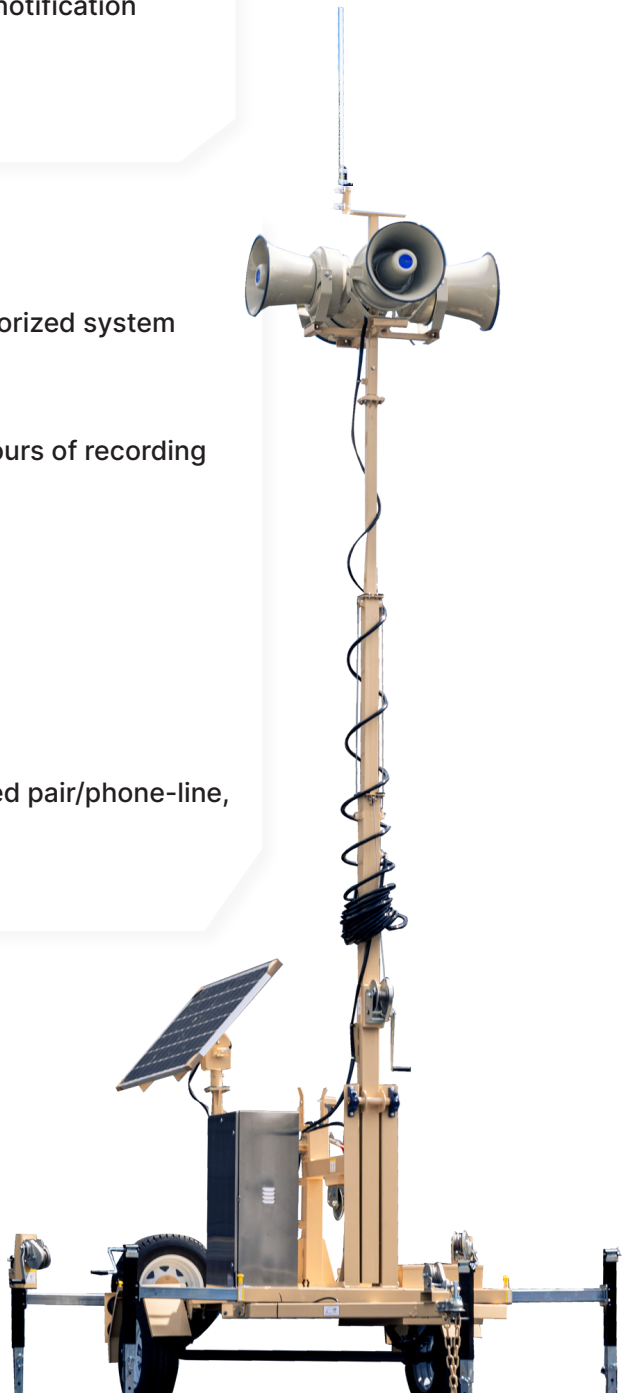
MHPSS

Mobile High Powered Speaker Station

A high powered outdoor PA speaker mounted on a sturdy steel trailer for easy transport. Provides 1600 Watts of continuous audio output power for reliable alert tone notification and delivery of pre-recorded messages in emergency situations or for public address. Designed for temporary usage including military installations, sporting events, large public gatherings or construction sites where a permanent mass notification system is not cost-effective.

KEY FEATURES

- Exceptional acoustic performance and intelligibility
- Message encryption and security coding prevents unauthorized system activations
- 1600 Watts of continuous audio output power
- Up to 255 pre-recorded voice messages with up to 100 hours of recording time
- 60 minutes of continuous tone operation*
- 7 days of standby time without AC power
- 10 standard alert tones plus live PA broadcast ability
- Automatic gain control for consistent output volume
- Remote control, monitoring, and activation
- Redundant communication paths available for larger
- MNS systems: IP (Ethernet), radio (UHF/VHF), fiber, twisted pair/phone-line, satellite, and cellular*
- Solar panel*



Physical Attributes	HPSS 1600	Trailer	400W Speaker
Length:	40”	184”	19”
Width:	23”	80”	21”
Depth:	15”	22”	24.34”
Weight:	118 lbs	2500 lbs	45 lbs
Environmental Characteristics			
Temperature:	-40°C to +60°C		
Humidity:	0 to 95% non-condensing		
Electrical Characteristics	HPSS 1600 Watt	HPSS 3200 Watt	
Supply Voltage:	120VAC 60Hz, 240VAC 50Hz	120VAC 60Hz, 240VAC 50Hz	
Supply Current Max:	5A	3A	
Standby Current (24 VDC):	550mA typical §	550mA typical §	
Standby Time (without AC):	> 7 days §	> 7 days §	
Activation Time Max:	60 minutes (steady tone, full power) §	60 minutes (steady tone, full power) §	
Battery Backup:	2 to 12V 100AH*	2 to 12V 100AH*	
Radio Power Supply:	12V DC, 12A max*	12V DC, 12A max*	
Communication I/O			
Communication (to ATI units):	UHF/ VHF RF, IP, Ethernet-over-Fiber, Telephone/ Twisted - DSL, Cellular, and Satellite		
RS485/RS232 Port:	1 maximum (either RS485 or RS232)*		
Signaling Inputs:	8 maximum (configurable)*		
Signaling Outputs:	8 maximum (configurable)*		
Audio Out (for PA or FACP):	Configurable 300/600 ohm balanced or unbalanced*		
Pre-Recorded Messages/Tone Characteristics			
Alert Tones:	10 pre-configured alert tones		
Recorded Messages:	255 max		
Recording Time Max:	100 hours (depends on recording content)		
Amplifier Characteristics	HPSS1600	HPSS3200	
400W Speakers:	Up to 4	UP to 8	
Output Voltage:	25V	25V	
Power max (audio/strobe):	1600W RMS	3200W RMS	
Audio Bandwith:	250Hz to 5kHz	250Hz to 5kHz	
Output Regulation:	< 1dB no load to full load	< 1dB no load to full load	
Amplifier Efficiency	90%	90%	

* Additional hardware/firmware may be required.

§ Assuming 2 or 4 12V 100AH batteries

1 surrounding
area



Attachment #3

2





Substitute for 3

4.1 good open land

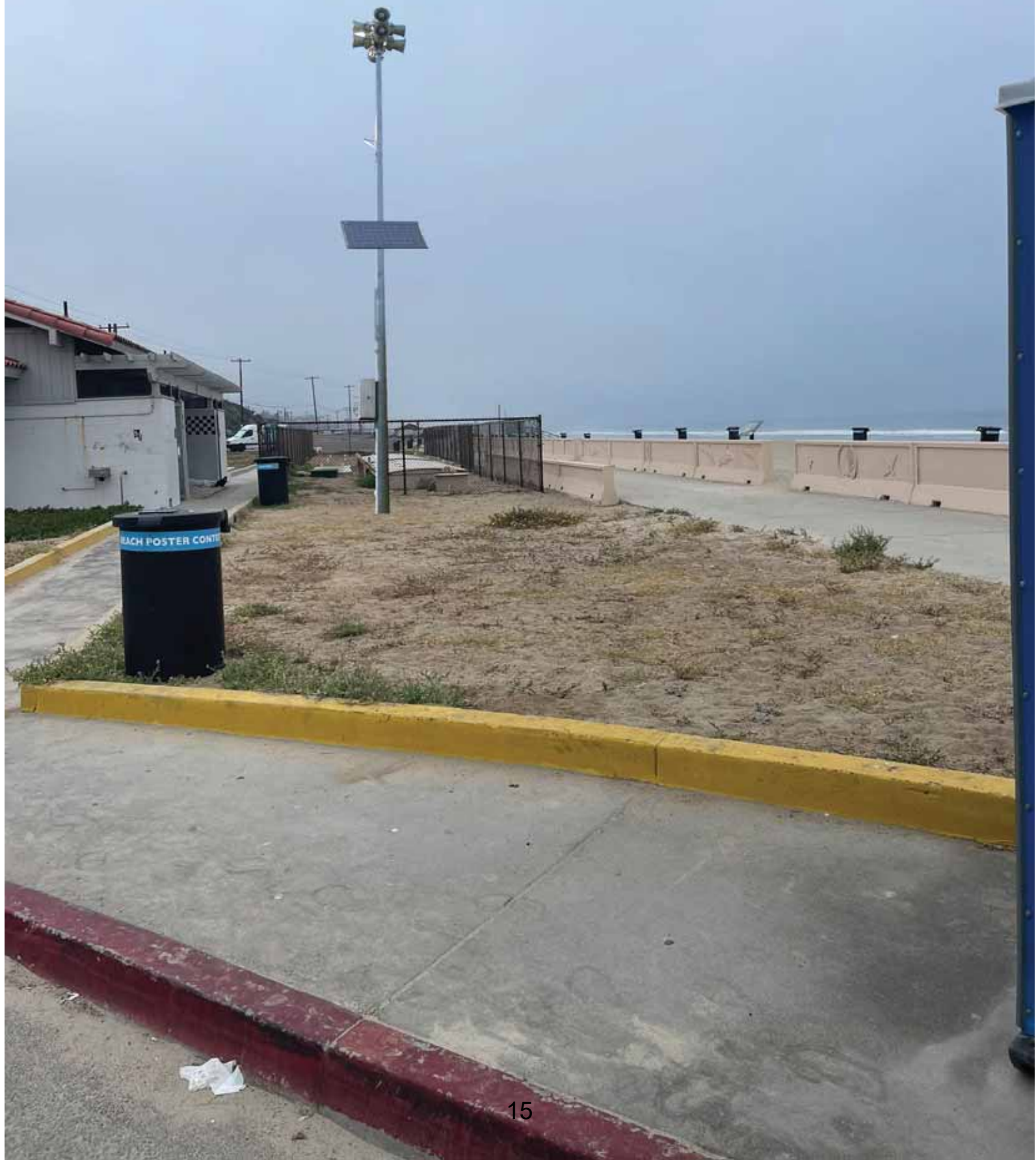


6 substitute 20 yards away





7



10.1



Fire
department
close to 11



12 surrounding
area







15.1







18.1



Windy road
close









23 good area
near
coordinates









27.1







30



31





