

CHERRY HILLS VILLAGE
COLORADO

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Cherry Hills Village, CO 80113
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Village Center
Telephone 303-789-2541
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City Council Agenda
Tuesday, September 2, 2014

6:30 p.m.

1. Call to Order
2. Roll Call of Members
3. Pledge of Allegiance
4. Candidate Lot Draw for the November 4, 2014 Ballot
5. Reports from Members of City Boards and Commissions
6. Audience Participation Period (limit 5 minutes per speaker)
7. Consent Agenda
 - a. Approval of Minutes – August 19, 2014
 - b. Resolution 13, Series 2014; Approving a Ballot Question on Re-establishing the City's Right to Provide Telecommunications Services, Advanced Services and Cable Television Services
8. Items Removed From Consent Agenda
9. Unfinished Business
 - a. Council Bill 5, Series 2014; Approving a Ballot Measure for the November 4, 2014 Election to Amend the Home Rule Charter to Clarify When the Organizational Meeting Will Occur Following a Regular City Election (*second and final reading*)
10. New Business
 - a. Recommendation from the Public Art Commission on Placing Public Art in the City
11. Reports
 - a. Mayor
 - b. Members of City Council
 - c. City Manager and Staff
 - (i) Bulk Plane and Floor Area Ratio Evaluation Study
 - (ii) Outdoor Emergency Warning System Report
 - d. City Attorney
12. Executive Session pursuant to CRS Section 24-6-402(4)(b) and Section 24-6-402(4)(e) for purposes of receiving legal advice and determining positions relative to matters subject to negotiations regarding *City of Cherry Hills Village v Cooper* currently pending in Municipal Court
13. Adjournment

Notice: Agenda is subject to change.
If you will need special assistance in order to attend any of the City's public meetings, please notify the City of Cherry Hills Village at 303-789-2541, 48 hours in advance.

Minutes of the
City Council of the City of Cherry Hills Village, Colorado
Held on Tuesday, August 19, 2014 at 6:30 p.m.
At the Village Center

Mayor Doug Tisdale called the meeting to order at 6:30 p.m.

ROLL CALL

Mayor Doug Tisdale, Councilors Mark Griffin, Russell Stewart, Alex Brown, Scott Roswell, Klasina VanderWerf, and Katy Brown were present on silent roll call. Also present were City Manager John Patterson, City Attorney Linda Michow, Deputy City Manager and Public Works Director Jay Goldie, Community Development Director Rob Zuccaro, Police Chief Michelle Tovrea, Human Resource Analyst Kathryn Barlow, Parks, Trails & Recreation Administrator Ryan Berninzoni, Special Projects Coordinator Emily Kropf and City Clerk Laura Smith.

Absent: none

PLEDGE OF ALLEGIANCE

Sara Binder (President), Elisa Williamson, Keriann DeLine, and Cece Palmquist, 12th grade elected leaders of STUCO at St. Mary's Academy High School led the Council in the pledge of allegiance.

MEMBERS OF CITY BOARDS AND COMMISSIONS

There were no reports.

AUDIENCE PARTICIPATION PERIOD

None

CONSENT AGENDA

Mayor Pro Tem Stewart moved, seconded by Councilor Griffin to approve the following items on the Consent Agenda:

- a. Approval of Minutes – August 5, 2014
- b. Amendment to the IGA with the City of Englewood for Fleet Maintenance and Repair

The motion carried unanimously.

ITEMS REMOVED FROM CONSENT AGENDA

None

UNFINISHED BUSINESS

None

NEW BUSINESS

Council Bill 4, Series 2014; Amendment to Municipal Code Section 17-4-30 Concerning Engineering and Construction Criteria (first reading)

Special Projects Coordinator Kropf presented Council Bill 4, Series 2014 on first reading. She explained that the proposed council bill would amend Section 17-4-30 of the Code to update the engineering and construction criteria in conjunction with the subdivision of land to meet current standards. She indicated that the current Code referenced out-of-date Arapahoe County standards from 1972, and that the proposed council bill would update the reference to 2007 Arapahoe County standards, as well as adding references to additional standards related to stormwater management from Arapahoe County, storm drainage from Urban Drainage and Flood Control District, and roadway design and road and bridge construction from the Colorado Department of Transportation. She noted that the City Engineer, City Attorney, and Public Works Department recommended approval of the proposed council bill. She added that the recommended motion in the staff memo should be amended with the correct date, August 19th, instead of August 21st.

Councilor Roswell moved, seconded by Councilor VanderWerf to approve Council Bill 4, Series 2014 on first reading amending Municipal Code Section 17-4-30 as proposed in Exhibit B of the August 21, 2014 staff memorandum, updating the engineering and construction criteria in conjunction with the subdivision of land.

The following votes were recorded:

Katy Brown	yes
Mark Griffin	yes
Russell Stewart	yes
Scott Roswell	yes
Klasina VanderWerf	yes
Alex Brown	yes

Vote on the Council Bill 4-2014: 6 ayes. 0 nays. The motion carried.

Request by Cherry Hills North Home Owners Association for a Revocable Encroachment License to Install, Construct and Maintain Neighborhood Identification Signage in City-Owned Right-of-Way

Director Zuccaro presented a request by the Cherry Hills North (CHN) Home Owners Association (HOA) for a revocable encroachment license to install, construct and maintain neighborhood identification signage in City-owned right of way. He explained that one of the neighborhood signs had been damaged by a car recently and when the HOA had approached the City to determine the proper procedure for repair it was discovered that the sign was in the right of way. The HOA then surveyed all of their signs and found that five out of the fourteen were located in the right of way. Staff was not able to find anything in City records regarding installation of the original signs. The HOA's request for a revocable encroachment license would cover the five signs in the right of way and enable them to rebuild the damaged sign and maintain the others. Director Zuccaro indicated that staff recommended approval of the request.

Councilor Griffin asked if all the signs met the City's sight triangle regulations or if they would be grandfathered in.

Director Zuccaro replied that the sign replacing the damaged sign would need to be in conformance with the City's clear sight triangle requirements. He added that staff had not evaluated the other signs for compliance with those requirements but could do so if desired by Council.

Mayor Pro Tem Stewart suggested changing the language in section 3.2.1 of the license agreement to so that City termination of the agreement would be at the sole discretion of the City Manager.

Mayor Tisdale agreed.

CHN HOA President Jennifer Niederhauser, 5232 Nassau Cir E, explained that the HOA signs had been in place a long time and the HOA was going through this process in order to have them properly recorded with the City.

Councilor K. Brown noted that the request represented an enormous amount of work from the HOA's volunteer board to bring the signs into compliance with City regulations. She commended the HOA and indicated her support of the request.

Councilor Griffin expressed concern with the possibility of Council requiring reconstruction of any existing signs that do not meet the City's sight triangle regulations.

Mayor Tisdale stated that it was not the Council's intention to place any undue burden on the HOA.

Councilor K. Brown moved, seconded by Councilor A. Brown to approve the proposal by the Cherry Hills North HOA for a revocable encroachment license to install, construct and maintain neighborhood identification signage in City-owned right of way as proposed in Exhibit A to the August 19, 2014 staff memorandum as amended by Councilor Stewart to be drafted by the City Attorney.

Mayor Pro Tem Stewart clarified that it was Council's intent to authorize the City Attorney to negotiate language changes to section 3.2.1 of the license agreement as discussed at tonight's meeting.

The motion passed unanimously.

Council Bill 5, Series 2014; Approving a Ballot Question for the November 4, 2014 Election to Amend the Home Rule Charter to Clarify When the Organizational Meeting Will Occur Following a Regular City Election (first reading)

City Clerk Smith presented Council Bill 5, Series 2014 on first reading. She explained that the proposed bill would place a question on the November 4, 2014 ballot to amend three sections of the City Charter to clarify that the organizational meeting for newly elected officials would be held at the first meeting in January rather than the Monday after the election as has been the case for past elections. She indicated that this change stemmed from the change in regular municipal elections from April to November and that newly elected officials would not assume the duties of office until the first meeting in January following the election, approved by the voters in April 2012.

Councilor K. Brown moved, seconded by Councilor Griffin to approve Council Bill 5, Series 2014, approving a ballot question to be submitted to the voters at the coordinated election held November 4, 2014 to amend the Home Rule Charter to clarify when the organizational meeting will occur following a regular city election, on first reading.

The following votes were recorded:

Mark Griffin	yes
Russell Stewart	yes
Scott Roswell	yes
Klasina VanderWerf	yes
Alex Brown	yes
Katy Brown	yes

Vote on the Council Bill 5-2014: 6 ayes. 0 nays. The motion carried.

Resolution 13, Series 2014 Approving a Ballot Question on Re-establishing the City's Right to Provide Telecommunications Services, Advanced Services and Cable Television Services

Mayor Tisdale noted that ballot questions involving Charter amendments had to be passed by ordinance, while other ballot questions could be passed by resolution.

City Attorney Michow presented Resolution 13, Series 2014 and explained that it would place a question on the November 4, 2014 ballot concerning fiber optic infrastructure. She noted that Council had recommended this ballot question. She indicated that

Senate Bill 05-152 had restricted the authority of local governments to provide telecommunications services to its residents unless a ballot question that reinstates such right was passed by voters in a local election. She noted that the ballot question language was based on the ballot language used by the cities of Centennial and Longmont.

Councilor A. Brown noted that cities seemed to be referring this matter to their voters with more frequency in recent years. He indicated that the Utility Line Undergrounding Study Committee was discussing the possibility of new mill levies as well as other funding possibilities. He added that this issue of fiber optics infrastructure was being discussed by the committee as part of the larger issue that they were exploring. He noted that while this ballot question did not increase taxes he was concerned that the ballot language could be argued to indicate that the City would never be allowed to use future tax increases to implement the authority granted by the proposed ballot question. The result would be the need to hold a second authorizing vote to use the tax revenue. While he agreed it was necessary that the ballot question included language assuring voters that this ballot question did not include a tax increase, he suggested that the language be moved from the first line of the question to the end of the question and make clear that the lack of taxes referred to this ballot measure only. He hoped this adjustment would avoid any potential future debate.

Mayor Tisdale asked for City Attorney Michow's opinion.

City Attorney Michow indicated that she had discussed the issue with Councilor A. Brown and both agreed that any future argument could be easily defended against, but that Councilor A. Brown's concern about the perception of the ballot language was certainly valid.

Mayor Tisdale suggested that "by virtue of this measure" be added to the language at the beginning of the question in order to address Councilor A. Brown's concerns. He indicated that it was preferable to keep the language at the front of the question to make the point clear to voters right away.

Mayor Pro Tem Stewart indicated that he would like time to review the discussed changes to the question and suggested that Council table the resolution to the September 2nd meeting.

Councilor Roswell agreed.

Councilor VanderWerf asked about the intent of Senate Bill 05-152.

Mayor Pro Tem Stewart replied that it was based on telecommunication companies' concern with public competition.

Councilor VanderWerf asked about public education regarding the ballot question.

City Attorney Michow replied that the City was limited by the Fair Campaign Practices Act as to use of public funds regarding ballot measures but the Council was permitted to pass a resolution supporting the measure and could issue pro/con statements.

Mayor Tisdale indicated that Council had no current plans involving fiber optic infrastructure but simply wanted to refer this question to the voters to restore the authority that the state legislature had removed with Senate Bill 05-152.

City Clerk Smith reminded Council that September 2nd was the last regular Council meeting at which measures could be placed on the November 4, 2014 ballot as the certified ballot content was due to Arapahoe Count by September 5th.

Councilor Griffin noted that he would be absent September 2nd.

Councilor Roswell moved, seconded by Councilor A. Brown to table Resolution 13, Series 2014 until the September 2, 2014 meeting to allow the City Attorney to amend the language per the discussion at tonight's meeting.

The motion passed unanimously.

REPORTS

Mayor's Report

Mayor Tisdale reported that he would join the Denver Rustlers Group to attend the Colorado State Fair next week.

Members of City Council

Councilor K. Brown reported that the Quincy Farm Visioning Committee had met this morning and would meet again next Monday afternoon. She noted that she had attended the Centennial Airport Noise Roundtable meeting and had been appointed to the data analysis committee to analyze the data collected by the new noise monitoring system. She indicated that this would provide concrete data on which to base discussions rather than relying on anecdotal data, and was a positive advancement for the Roundtable.

Councilor A. Brown asked about helicopters.

Councilor K. Brown replied that helicopters were an important issue for the Roundtable and warranted their own priority item.

Councilor Griffin reported issues with the traffic light for the Cherry Hills Country Club on S. University Blvd.

Mayor Pro Tem Stewart had no report.

Councilor Roswell thanked Mayor Pro Tem Stewart for attending the open space meeting last week in his place.

Councilor VanderWerf reported that the Public Art Commission would meet on August 25th and review the three finalist artists for a loaned sculpture to place in front of the Joint Public Safety Facility. She noted that they were Colorado artists and that two were well known – Emmett Culligan and Yoshi Saito.

Councilor A. Brown had no report.

City Manager & Staff

City Manager Patterson reported that staff was working on the 2015 budget; the new fuel tank had been installed; construction was underway at the Cherry Hills Country Club for the BMW Golf Tournament; the Police Department had participated in a “table top” exercise for the BMW Tournament; the open space meeting on August 12th had been productive and he thanked Council for their leadership with this meeting; the City had received \$84,000 in use tax revenue and Director Proctor was estimating that revenues would exceed expenditures by \$400,000 for 2014; Commander Weathers was doing well post-surgery; the lot drawing for placing candidate names on the November 4, 2014 ballot would be held at the September 2nd Council meeting; bank stabilization was underway at Woodie Hollow Park; crime was down by 23% in 2014 from 2013; Community Development revenue was exceeding the 2014 budget by \$140,000.

Councilor Roswell commended the Police Department for their participation in the ice bucket challenge and noted the camaraderie between the Police Department and South Metro Fire Rescue.

Bulk Plane and Floor Area Ratio Evaluation Study

Director Zuccaro indicated that staff recommended a study be done to evaluate the effectiveness of the bulk plane and floor area ratio ordinance which had been in effect since September 2011. He reminded Council that adoption of these regulations had been a recommendation of the Residential Development Standards Committee (RDSC) and were intended to address larger new homes and their negative impact on community character and privacy. He noted that since the ordinance became effective 36 new homes had been built in the City. He indicated that this was a sufficient sample size on which to evaluate the ordinance. He noted that \$20,000 was included in the 2014 budget for a study and that staff recommended contracting with the urban design firm Winter and Company for the study. This was the same company that the City had hired to complete a study and make recommendations on implementing the RDSC proposal for a bulk plane standard, and was then hired again to draft the ordinance that was ultimately adopted by Council. He noted the evaluation study would include a review of the construction projects since adoption of the ordinance, involvement of stakeholders, public input, and both data and visual analysis. He estimated that the

study would take three to five months to complete, and recommended a committee be formed including City Council members, Planning and Zoning Commissioners, and RDSC members.

Councilor A. Brown asked how the 36 homes were spread over the various zone districts in the City.

Director Zuccaro replied that staff had not broken out the 36 homes by zone district but could do so and return with that information to Council.

Mayor Pro Tem Stewart agreed that the metrics should be estimated prior to beginning the study.

Councilor Griffin noted that the bulk plane and FAR regulations came up frequently before the Board of Adjustment and Appeals and indicated his support of an evaluation study.

Mayor Tisdale asked Director Zuccaro to return at the September 2nd meeting with information on how the 36 homes were spread among the zone districts before proceeding with the study.

City Attorney

City Attorney Michow had no report.

ADJOURNMENT

Mayor Pro Tem Stewart moved, seconded by Councilor K. Brown to proceed into Executive Session pursuant to C.R.S. Section 24-6-402(4)(b) and Section 24-6-402(4)(e) for purposes of receiving legal advice and determining positions relative to matters subject to negotiations regarding *City of Cherry Hills Village v. Cooper* pending currently in Municipal Court and further upon completion of the Executive Session to stand adjourned.

The following votes were recorded:

Russell Stewart	yes
Scott Roswell	yes
Klasina VanderWerf	yes
Alex Brown	yes
Katy Brown	yes
Mark Griffin	yes

Vote on Executive Session: 6 ayes. 0 nays. The motion carried.

The regular meeting adjourned at 7:26 p.m.

Draft

Draft

Draft

The executive session adjourned at 7:49 p.m.

Douglas M. Tisdale, Mayor

Laura Smith, City Clerk



WIDNER MICHOW & COX, LLP

ATTORNEYS AT LAW

TO: Honorable Mayor Tisdale and Members of City Council
FROM: Linda Michow, City Attorney
CC: John Patterson, City Manager
Jay Goldie, Public Works Director & Deputy City Manager
Laura Smith, City Clerk
DATE: September 2, 2014
SUBJECT: Item No. 7b: Resolution No. 13-14; Ballot Question on Re-establishing the City's Right to Provide Telecommunications Services, Advanced Services and Cable Television Services

Update from August 19, 2014 Meeting:

At the August 19, 2014 City Council meeting, City Council considered a ballot question to seek voter approval to re-establish the City's right to provide telecommunication, internet and cable services either on its own or through public or private partnerships. At that time, City Council asked the City Attorney's Office to work with Councilmember Alex Brown and Mayor Pro Tem Stewart on revising the ballot language to clarify there is no tax increase associated with a "yes" vote on the question.

Based on Council's direction, and with close input from Councilmember A. Brown and Mayor Pro Tem Stewart, I have revised the ballot question presented in Resolution No. 13-14 as follows, with deletions shown as strike-through and new language shown as underlined:

SHALL THE CITY OF CHERRY HILLS VILLAGE, WITHOUT INCREASING TAXES BY THIS MEASURE, AND TO RESTORE LOCAL AUTHORITY THAT WAS DENIED TO LOCAL GOVERNMENTS BY THE COLORADO GENERAL ASSEMBLY AND FOSTER A MORE COMPETITIVE MARKETPLACE, BE AUTHORIZED TO DIRECTLY OR INDIRECTLY PROVIDE HIGH-SPEED INTERNET, INCLUDING IMPROVED HIGH BANDWIDTH SERVICES BASED ON NEW TECHNOLOGIES, TELECOMMUNICATIONS SERVICES, AND/OR CABLE TELEVISION SERVICES TO RESIDENTS, BUSINESSES, SCHOOLS, LIBRARIES, NON-PROFIT ENTITIES AND OTHER USERS OF SUCH SERVICES EITHER DIRECTLY OR INDIRECTLY WITH THROUGH PUBLIC OR PRIVATE SECTOR PARTNERS, COMPETITIVE AND NON-EXCLUSIVE PARTNERSHIPS WITH PRIVATE BUSINESSES, AS EXPRESSLY PERMITTED BY ARTICLE 27, TITLE 29 OF THE COLORADO REVISED STATUTES?

The revised ballot question clarifies: (1) there is no tax increase associated with the measure; and (2) the provision of services may be through public as well as private providers.

Resolution No. 13-14 incorporates the revised ballot question.

Recommended Motion:

"I move to approve Resolution 13, Series 2014, approving a ballot question to be submitted to the voters at the coordinated election held November 4, 2014 related to the local right to use municipal fiber optic infrastructure."

Attachments:

Exhibit A - Resolution No. 13-14 (revised)

Exhibit B - Memorandum dated August 19, 2014 (for background)

**RESOLUTION NO. 13
SERIES OF 2014**

**INTRODUCED BY:
SECONDED BY:**

**A RESOLUTION
OF THE CITY COUNCIL
OF THE CITY OF CHERRY HILLS VILLAGE
APPROVING A BALLOT QUESTION TO BE SUBMITTED TO THE VOTERS
AT THE COORDINATED ELECTION HELD NOVEMBER 4, 2014
RELATED TO THE LOCAL RIGHT
TO USE MUNICIPAL FIBER OPTIC INFRASTRUCTURE**

WHEREAS, the City of Cherry Hills Village ("City") will participate with the Arapahoe County Clerk and Recorder in the November 4, 2014 coordinated election; and

WHEREAS, the City Council has the authority, and desires to place a proposed ballot question on the November 4, 2014 ballot concerning the local right to use municipal fiber optic infrastructure; and

WHEREAS, until 2005, municipalities throughout Colorado enjoyed the right and authority to use municipal fiber optic infrastructure to provide high-speed Internet, advanced telecommunications, and cable television services to their residences and businesses; and

WHEREAS, in 2005, the State Legislature enacted Senate Bill 05-152 (codified in Article 27 of Title 29, C.R.S.) to revoke and deny all Colorado municipalities the right of using municipal facilities, improvements, and fiber optic infrastructure to provide directly or indirectly high-speed Internet, advanced telecommunications, and cable television services to residents and businesses; and

WHEREAS, Senate Bill 05-152 expressly authorizes every local government to submit a ballot question to the local voters to reauthorize and reclaim the local right to use the municipal fiber optic infrastructure to provide high-speed Internet, telecommunications, and cable television services to residents and businesses; and

WHEREAS, although the City does not currently own any municipal fiber optic infrastructure, future construction and use of such infrastructure would likely increase competition and potentially decrease costs of services to residents and businesses by providing opportunities to private service providers to partner with the City to use the City's fiber optic infrastructure to deliver services to residents and businesses; and

WHEREAS, the City Council has determined it is in the best interests of the City to refer a ballot question to the voters concerning the City's ability to provide directly or indirectly through private companies high-speed internet, advanced

telecommunications, or cable television services, as authorized pursuant to C.R.S. Section 29-27-201.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF CHERRY HILLS VILLAGE:

Section 1. The City Council hereby refers and approves the following ballot question for submission to the registered electors and to appear on the November 4, 2014 ballot coordinated by Arapahoe County:

SHALL THE CITY OF CHERRY HILLS VILLAGE, WITHOUT INCREASING TAXES BY THIS MEASURE, AND TO RESTORE LOCAL AUTHORITY THAT WAS DENIED TO LOCAL GOVERNMENTS BY THE COLORADO GENERAL ASSEMBLY AND FOSTER A MORE COMPETITIVE MARKETPLACE, BE AUTHORIZED TO PROVIDE HIGH-SPEED INTERNET, INCLUDING IMPROVED HIGH BANDWIDTH SERVICES BASED ON NEW TECHNOLOGIES, TELECOMMUNICATIONS SERVICES, AND/OR CABLE TELEVISION SERVICES TO RESIDENTS, BUSINESSES, SCHOOLS, LIBRARIES, NON-PROFIT ENTITIES AND OTHER USERS OF SUCH SERVICES EITHER DIRECTLY OR INDIRECTLY WITH PUBLIC OR PRIVATE SECTOR PARTNERS, AS EXPRESSLY PERMITTED BY ARTICLE 27, TITLE 29 OF THE COLORADO REVISED STATUTES?

YES _____
NO _____

Section 2. This Resolution and the ballot question posed to the electorate are intended and should be interpreted to restore to the greatest extent possible the right of self-governance, self-determination, and local control over all matters addressed in Article 27 of Title 29, C.R.S.).

Section 3. For purposes of C.R.S. § 31-11-111, this Resolution shall serve to set the title and content for the ballot question set forth herein and the ballot title for such question shall be the text of the question itself.

Section 4. The City Clerk is authorized to correct typographical errors and omissions and to cause to be entered into any blanks of the ballot question the appropriate ballot question number or letter upon designation of the ballot number or letter by the appropriate election official.

Section 5. The City Manager, City Attorney, and City Clerk are hereby authorized and directed to take all necessary and appropriate action to effectuate the provisions of this Resolution including the taking of all reasonable and necessary action to cause such approved ballot question to be printed and placed on the ballot for the election.

Section 6. If any section, paragraph, clause or provision of this Resolution shall for any reason be held to be invalid or unenforceable, the invalidity or unenforceability of such

section, paragraph, clause or provision shall not affect any of the remaining sections, paragraphs, clauses or provisions of this Resolution.

Section 7. This Resolution shall be effective immediately upon adoption.

DONE AND RESOLVED THIS ___ DAY OF _____ 2014.

Introduced, passed and adopted at the regular meeting of City Council this ___th day of _____, 2014, by a vote of _ Yes and _ No.

(SEAL)

Douglas M. Tisdale, Mayor

ATTEST:

APPROVED AS TO FORM:

Laura Smith, City Clerk

Linda C. Michow, City Attorney

**WIDNER MICHOW & COX^{LLP}**

ATTORNEYS AT LAW

TO: Honorable Mayor Tisdale and Members of City Council

FROM: Linda Michow, City Attorney

CC: John Patterson, City Manager
Jay Goldie, Public Works Director & Deputy City Manager
Laura Smith, City Clerk

DATE: August 19, 2014

SUBJECT: Resolution No. 13-14; Ballot Question on Re-establishing the City's Right to Provide Telecommunications Services, Advanced Services and Cable Television Services

Issue:

At the August 19, 2014 City Council meeting, City Council will consider a ballot question to seek voter approval to re-establish the City's right to provide telecommunication, internet and cable services either on its own or through public or private partnerships. The ballot question proposed in Resolution No. 13-14 is based on successful ballot questions from other communities, including the Cities of Centennial and Longmont.

Discussion:**Background:**

Many communities have installed fiber optic networks to monitor their electric, water, and wastewater systems and to provide enhanced emergency services communications, and have leveraged these networks to provide community benefits. In 2005, the Colorado General Assembly passed Senate Bill 05-152 codified in Article 27 of Title 29 of the Colorado Revised Statutes that restricts a local government's authority to provide telecommunications services to its residents, either independently or in partnership with the private sector, *unless* a ballot question that reinstates such right is passed by voters in a local election.

The limitations imposed by Senate Bill 152 are far reaching. For example, cities are prohibited from providing free Wi-Fi hotspots in its City offices because doing so would be in technical violation of the law. Additionally, cities would be prevented from using their existing or future fiber optic networks to provide temporary back-up services to residents or businesses in the case of a failure by an existing telecommunications provider. Contrary to the limitations imposed by Senate Bill 152, cities should have the right to fully leverage community-owned

infrastructure in order to provide, directly or indirectly, better service to residents and businesses.

Purpose of Ballot Question:

The purpose of Resolution No. 13-14 is to seek voter approval to restore the City's pre-2005 authority to provide telecommunications services either on its own or through partnerships with other providers. A "yes" vote will not increase City taxes but will allow the City to work with any public or private organization to provide new or advanced telecommunications services to the community.

Recommendation/Next Steps:

Approval of Resolution No. 13-14 will allow the City to take the first step in exploring the full range of opportunities and possibilities for improving service and competition in telecommunication, internet and cable to its residents and businesses. It is not intended to implement a specific plan or strategy, but rather enables the City to retain local control on the critical issue of telecommunications needs of the Cherry Hills Village community.

Upon approval of Resolution No. 13-14, City staff will take the necessary steps to place the ballot question on the November 4, 2014 ballot.

Recommended Motion:

"I move to approve Resolution 13, Series 2014, approving a ballot question to be submitted to the voters at the coordinated election held November 4, 2014 related to the local right to use municipal fiber optic infrastructure."

CHERRY HILLS VILLAGE
COLORADO

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ITEM: 9a

MEMORANDUM

TO: HONORABLE MAYOR TISDALE AND MEMBERS OF THE CITY COUNCIL

FROM: LAURA SMITH, CITY CLERK

SUBJECT: COUNCIL BILL 5, SERIES 2014; APPROVING A BALLOT QUESTION FOR THE NOVEMBER 4, 2014 ELECTION TO AMEND THE HOME RULE CHARTER TO CLARIFY WHEN THE ORGANIZATIONAL MEETING WILL OCCUR FOLLOWING A REGULAR CITY ELECTION (SECOND AND FINAL READING)

DATE: SEPTEMBER 2, 2014

ISSUE

Shall the City Council approve Council Bill 5, Series 2014 to place a question on the November 4, 2014 ballot to amend the City Charter to clarify when the organizational meeting will occur following a regular city election?

DISCUSSION

Voters approved a Charter Amendment change in the April 2012 election to move regular municipal elections to November of even-numbered years and to have elected officials assume the duties of office at the first meeting in January following the election. Staff has since found three Sections of the Charter that need to be amended to correct discrepancies between when officials are elected and when they take office.

Currently Sections 3.3, 3.7 and 6.1 of the Charter refer to an organizational meeting on the Monday after the election at which the Mayor Pro Tem is selected and city staff is appointed. Staff proposes the ballot question outlined in Council Bill 5, Series 2014 be placed on the November 2014 ballot to clarify that the organizational meeting will occur at the first meeting in January. Staff proposes that amendments to all three sections of the Charter be presented as one ballot question. This language and the attached Council Bill 5, Series 2014 have been reviewed by the City Attorney. There have been no changes since first reading at the August 19, 2014 Council meeting.

RECOMMENDED MOTION

“I move to approve Council Bill 5, Series 2014, approving a ballot question to be submitted to the voters at the coordinated election held November 4, 2014 to amend the Home Rule Charter to clarify when the organizational meeting will occur following a regular city election, on second and final reading.”

ATTACHMENTS

Exhibit A – Council Bill 5, Series 2014

**COUNCIL BILL 5
SERIES OF 2014**

**INTRODUCED BY:
SECONDED BY:**

**AN ORDINANCE
OF THE CITY COUNCIL
OF THE CITY OF CHERRY HILLS VILLAGE
APPROVING A BALLOT QUESTION TO BE SUBMITTED TO THE VOTERS
AT THE COORDINATED ELECTION HELD NOVEMBER 4, 2014
TO AMEND THE HOME RULE CHARTER
TO CLARIFY WHEN THE ORGANIZATIONAL MEETING WILL OCCUR
FOLLOWING A REGULAR CITY ELECTION**

WHEREAS, in accordance with Article XX, Section 6 of the Colorado Constitution, the City of Cherry Hills Village is a home rule municipality of the State of Colorado governed by a local charter ("Home Rule Charter"); and

WHEREAS, voters approved a Home Rule Charter amendment in the April 2012 regular City election to move regular municipal elections to November of even-numbered years and to have elected officials (Mayor and City Council) assume the duties of office at the first regular Council meeting in January following the election; and

WHEREAS, in accordance with Article XX, Section 9 of the Constitution and Section 13.13 of the Home Rule Charter, the City Council has determined that it is necessary to initiate amendments to the Home Rule Charter in order to amend several sections of the Charter to correct discrepancies between when officials are elected and when they take office; and

WHEREAS, upon adoption of this ordinance, the proposed Home Rule Charter amendments and ballot title(s) shall be submitted to a vote of the registered electors of the City at the November 4, 2014 election coordinated with Arapahoe County.

NOW, THEREFORE, THE CITY COUNCIL FOR THE CITY OF CHERRY HILLS VILLAGE, COLORADO, ORDAINS:

Section 1. The City Council hereby refers and approves the following ballot question for submission to the registered electors and to appear on the November 4, 2014 ballot coordinated by Arapahoe County:

QUESTION 1: SHALL THE FOLLOWING SECTIONS OF THE CITY OF CHERRY HILLS VILLAGE HOME RULE CHARTER BE AMENDED SUCH THAT THE ORGANIZATIONAL MEETING OF THE CITY COUNCIL WILL BE HELD IN JANUARY FOLLOWING EACH REGULAR CITY ELECTION TO READ AS FOLLOWS BY DELETING THE LANGUAGE SHOWN AS STRIKE-THROUGH AND ADDING THE LANGUAGE SHOWN AS UNDERLINED:

SECTION 3.3. MAYOR PRO TEM:

A MAYOR PRO TEM SHALL BE ELECTED BY THE COUNCIL FROM ITS OWN MEMBERSHIP AT THE ~~FIRST ORGANIZATIONAL~~ MEETING FOLLOWING EACH BIENNIAL ELECTION OR AN ADJOURNMENT THEREOF. THE MAYOR PRO TEM SHALL SERVE UNTIL THE ~~COUNCIL ORGANIZATIONAL~~ MEETING FOLLOWING THE NEXT REGULAR CITY ELECTION, AND SHALL ACT AS MAYOR DURING THE ABSENCE OR DISABILITY OF THE MAYOR. IN THE EVENT OF ABSENCE OR DISABILITY OF BOTH THE MAYOR AND THE MAYOR PRO TEM, THE COUNCIL SHALL DESIGNATE ANOTHER OF ITS MEMBERS TO SERVE AS ACTING MAYOR DURING SUCH ABSENCE OR DISABILITY. ANY MAYOR PRO TEM OR ACTING MAYOR, WHILE SERVING AS SUCH, SHALL RETAIN ALL POWERS GRANTED HEREIN TO COUNCILMEN MEMBERS.

SECTION 3.7. COUNCIL MEETINGS:

THE COUNCIL SHALL MEET REGULARLY AT LEAST ONCE EACH MONTH AT A DAY AND HOUR AND PLACE TO BE FIXED BY THE RULES AND PROCEEDINGS OF EACH COUNCIL. THE COUNCIL SHALL PRESCRIBE THE RULES OF PROCEDURE GOVERNING MEETINGS. ALL REGULAR AND SPECIAL MEETINGS OF THE COUNCIL SHALL BE OPEN TO THE PUBLIC, AND CITIZENS AND EMPLOYEES SHALL HAVE A REASONABLE OPPORTUNITY TO BE HEARD. AN ORGANIZATIONAL MEETING SHALL BE HELD ~~ON THE MONDAY~~ AT THE FIRST COUNCIL MEETING IN JANUARY FOLLOWING EACH REGULAR CITY ELECTION. FOUR MEMBERS OF THE COUNCIL SHALL CONSTITUTE A QUORUM. WRITTEN MINUTES OF THE PROCEEDINGS OF EACH MEETING SHALL BE KEPT BY THE CLERK AND SIGNED BY THE MAYOR.

SECTION 6.1. TIME OF APPOINTMENT:

AT ITS ~~FIRST ORGANIZATIONAL~~ MEETING AFTER EACH REGULAR CITY ELECTION, THE COUNCIL SHALL APPOINT THE OFFICIALS HEREINAFTER ENUMERATED IN THIS ARTICLE WITH THE POWERS AND DUTIES HEREIN SPECIFIED. SUCH APPOINTMENTS SHALL BE AT THE PLEASURE OF THE COUNCIL, AT SUCH COMPENSATION AS THE COUNCIL MAY BY RESOLUTION FROM TIME TO TIME ESTABLISH.

YES _____ NO _____

Section 2. For purposes of C.R.S. Section 31-11-111, this Ordinance shall serve to set the title and content for this Charter Amendment question and the ballot title for such

question shall be the text of the question itself. In connection with the fixing of the ballot question herein, the City Council finds and determines as follows:

- A. The general understanding of the effect of a “yes” or “no” vote on the ballot question will be clear to the electors.
- B. The ballot title for the ballot question will not conflict with those titles selected for any other measure that will appear on the municipal ballot at the November 4, 2014 City election.
- C. The ballot title for the ballot question correctly and fairly expresses the true intent and meaning of the measure.

Section 3. The City Council hereby appoints the City Clerk as the designated election official for the purposes of the coordinated election to be held on November 4, 2014.

Section 4. The City Clerk is authorized to correct typographical errors and omissions and to cause to be entered the appropriate ballot question numbers or letters upon designation of the ballot number or letter by the appropriate election official.

Section 5. The City Manager, City Attorney, and City Clerk are hereby authorized and directed to take all necessary and appropriate action to effectuate the provisions of this Ordinance including all reasonable and necessary action to cause such approved ballot questions to be printed and placed on the ballot for the election.

Section 6. Severability. If any provision of this Ordinance should be found by a court of competent jurisdiction to be invalid, such invalidity shall not affect the remaining portions or applications of this ordinance that can be given effect without the invalid portion, provided that such remaining portions or applications of this ordinance are not determined by the court to be inoperable. The City Council declares that it would have adopted this Ordinance and each section, subsection, sentence, clause, phrase, or portion thereof, despite the fact that any one or more section, subsection, sentence, clause, phrase, or portion would be declared invalid.

Section 7. Effective Date. This Ordinance shall become effective ten (10) days after publication on second reading in accordance with Section 4.5 of the Charter for the City of Cherry Hills Village.

Adopted as Ordinance No. ___, Series 2014, by the City Council of the City of Cherry Hills Village, Colorado this ___ day of _____, 2014.

Douglas M. Tisdale, Mayor

ATTEST:

Approved as to form:

Laura Smith, City Clerk

Linda C. Michow, City Attorney

Published in the Villager

Published: _____

Legal # _____

CHERRY HILLS VILLAGE
COLORADO

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Village Center
Telephone 303-789-2541
FAX 303-761-9386

ITEM: 10a

MEMORANDUM

TO: HONORABLE MAYOR TISDALE AND MEMBERS OF THE CITY COUNCIL
FROM: KAREN PROCTOR, DIRECTOR OF FINANCE
SUBJECT: RECOMMENDATION FROM THE PUBLIC ART COMMISSION ON
PLACING PUBLIC ART IN THE CITY
DATE: SEPTEMBER 2, 2014

ISSUE

The Public Art Commission is recommending a proposed art piece to be displayed in a garden within the Village Center Campus.

DISCUSSION

The Cherry Hills Village Art Commission was formed in 2011 with the purpose of selecting, locating, placing and maintaining art in public places and exposing the community to the arts.

In April 2014 the Commission launched a Call for Entry through the CaFE website to seek Colorado artists interested in loaning a piece of art to the City for placement in front of the Joint Public Safety Facility. The Commission received a total of 12 entries and evaluated three finalists at their August 25, 2014 meeting.

The Commission is excited to have chosen an art piece entitled *Colorado Loop 6* by Colorado artist Yoshi Saito to be loaned to the City for a minimum of one year and is seeking Council's approval of the loan as well as placement of the piece in a garden within the Village Center Campus.

The Commission is exploring a possible donation of art pieces by Colorado artist Emmett Culligan for placement in front of the Joint Public Safety Facility and hopes to return to Council with a subsequent proposal after the Commission's September 29th meeting.

BUDGET IMPACT STATEMENT

The 2014 Budget includes \$15,000 for the Art Commission, of which \$13,162.17 remains. The Commission estimates that installation of the proposed art piece will cost no more than \$2,000.

NEXT STEPS

The Commission is seeking approval from City Council to move forward in working with Yoshi Saito and City staff to acquire and place the proposed art piece *Colorado Loop 6*.

RECOMMENDED MOTION

“I move to approve the loan to the City for a minimum of one year of Colorado artist Yoshi Saito’s piece entitled *Colorado Loop 6* and placement of the piece in a garden within the Village Center Campus.”

ATTACHMENTS

Exhibit A: Photo of Yoshi Saito’s work and Bio



Colorado Loop 6, 2012, 41" x 38" x 12"

Yoshitomo Saito was born in 1958 in Tokyo, Japan. He spent his first nineteen years of schooling period at the same educational institution called Jiyu Gakuen (School of Freedom) in Tokyo. This unusual mono-schooling experience at the small private Christian school naturally made a profound impact on him. One of the most significant impacts on the matter of artistic merit came from its visual cultural environment. Since this school is housed in the marvelous architecture by the renowned American architect Frank Lloyd Wright (built in 1921, designated in 1997 as an important cultural property by the government), and other newer structures by his direct disciples, Saito, from early age on, had to grow up surrounded by the strong taste of authentic Wright expressions. His interest in the world of independent artistic voices was nourished in this line of peculiarly unique esthetic environment.

Saito came to the United States in 1983 to study American studio glass art at the Penland School of Crafts in North Carolina. He then moved to the Bay Area to attend California College of the Arts in Oakland. At CCA, he studied glass under Marvin Lipofsky and sculpture under Dennis Leon and Linda Fleming. He began using bronze during this period and received his MFA in Sculpture with High Distinction in 1987.

Immediately after graduation, he has started to show his work at some outstanding contemporary art showcases in the Bay Area. Especially since 1991, very prestigious Haines Gallery of San Francisco has been actively exhibiting and promoting his work. Saito's bronze is in the numerous important collections in the Bay Area including the M.H. de Young Museum of Golden Gate Park.

In 2006, the artist moved to Colorado in search of new and affordable live and work situation to pursue the lifestyle of fully engaged independent artist. He now operates his private studio foundry at Ironton Studios in RiNo Art District of Denver.

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ITEM: 11c(i)

MEMORANDUM

TO: HONORABLE MAYOR TISDALE AND MEMBERS OF THE CITY COUNCIL

FROM: ROBERT A. ZUCCARO, COMMUNITY DEVELOPMENT DIRECTOR

SUBJECT: BULK PLANE AND FAR EVALUATION STUDY

DATE: SEPTEMBER 2, 2014

At the August 19, 2014 City Council meeting, staff presented a proposal for a study to evaluate the City's Bulk Plane and FAR ordinances. The Council asked staff to provide a breakdown of permits issued by zone district since adoption of the ordinance in September of 2011 in order to determine if there is an adequate sample size for the study. The following table breaks down the new home and addition permits issued by zone district since adoption of the ordinances:

<i>Zone District</i>	<i>New Home</i>	<i>Addition</i>
R-1	10	9
R-2	6	8
R-3	12	24
R-4	1	16
R-5	0	5

In addition, attached as Exhibit A, is a map showing the location of each permit that was issued since adoption of the ordinance.

The primary purpose of the study is to determine whether the ordinance is meeting the original intent of the Residential Development Standards Committee (RDSC) to address a development trend of looming, massive new homes in traditional neighborhoods that negatively impact the neighborhood's character and privacy. The study would also evaluate implementation of the ordinance to determine if the code could be administered in a more efficient and effective manner.

If the Council would like to move forward with the study, staff recommends that the urban design consultant that assisted with drafting the ordinance, Winter and Company, be hired to

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COLORADO

lead the study. Attached as Exhibit B is a proposed scope of services provided by Winter and Company.

ATTACHMENTS:

Exhibit A: Reference Map of New Home and Addition Permit Issued Since September 25, 2011

Exhibit B: Proposed Scope of Work from Winter and Company

July 31, 2014

Emily Kropf
Special Projects Coordinator
City of Cherry Hills Village, CO

RE: Proposal to evaluate residential development standards (FAR and bulk plane) ordinance and provide recommendations

Dear Emily,

Thank you for contacting us regarding the City's plans to evaluate the impact of the 2011 residential development standards ordinance. We would be delighted to assist Cherry Hills Village with this project. As you know, Winter & Company has extensive experience with drafting and evaluating residential development standards in a wide range of settings.

The residential development standards ordinance has now been in place for about three years. A thorough evaluation of its impact on construction trends will help determine whether the ordinance is properly addressing identified issues with new construction and additions that are overly massive, loom over their neighbors or negatively impact privacy. Conversations with builders, architects and the public will also help highlight potential issues with the application of the new FAR and bulk plane standards that could be addressed through process changes or other improvements. This understanding of ordinance impacts and potential issues will inform a range of potential updates and improvements that will ensure that the residential development standards remain effective.

I have attached a proposed scope of work and budget, as well as information on personnel that would be assigned to the development standards evaluation. We have included several potential meetings that may be included at later stages of the project if they are helpful. These meetings could be removed to reduce the overall project budget, or may be reassigned to provide time for follow-up meetings with architects and builders, additional project committee meetings or other tasks.

Please do not hesitate to contact me if you have additional questions.

Sincerely,



Abe Barge



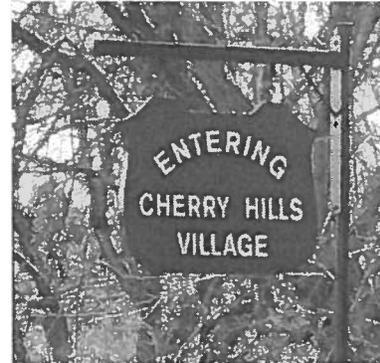
Winter & Company
Urban Design | Historic Preservation
1285 Yellow Pine Avenue
Boulder, CO 80304
303.440.8445
www.winterandcompany.net

Scope of Work

Task 1: Initial Review of Construction Trends

Objectives for Task 1:

- Review and summarize recent construction trends
- Discuss stakeholder experiences with the residential development standards (FAR and bulk plane) ordinance



Subtasks:

1.1 Review construction data & plans.

The consultant will obtain current GIS downloads from City Staff to summarize quantitative building trends before and after adoption of the ordinance. Questions to answer include:

- Was there a noticeable change in building square footage after ordinance adoption?
- How many homes were built to near the maximum permitted FAR? Did this vary by zone district?
- Is there a noticeable trend in overall building size or FAR?

1.2 Review of recent construction.

The consultant will tour the community to photograph recent construction and evaluate its relationship to the FAR and bulk plane ordinance.

1.3 Meet with the project committee to kick off the project.

The consultant will meet with a City Council-appointed project committee, which may be similar to the previous Residential Development Standards Committee (RDSC). Discussion will include project scope, community/stakeholder participation plans and review of initial project data and photographs.

1.4. Meet with stakeholders (architects and builders) to discuss trends and potential issues.

The consultant will meet with architects and builders to discuss recent construction trends and the effect of the ordinance. This may be a combined meeting or separate meetings for each group, depending on participant response. Stakeholders will be also invited to other public project meetings.

Task 1 Deliverables

- Memo summarizing results of the data evaluation and review of recent construction
- Agendas for committee and stakeholder meetings
- Presentation for committee meeting

Task 2: Visual Evaluation of Ordinance Impacts

Objectives for Task 2:

- Solicit public feedback on recent construction trends
- Review overall impact of the 2011 residential development standards (FAR and bulk plane) ordinance on the design of new construction and additions

Subtasks:

2.1 Meet with the project committee to review construction trends and potential revisions.

The consultant will help conduct a follow-up meeting with the committee to conduct a visual evaluation of computer model images of pre- and post-ordinance construction and consider improvements to ordinance standards.

2.2 Conduct community open house.

The consultant will help host a community open house to explain the evaluation project to interested members of the public and solicit feedback on recent construction trends and the impact of the ordinance. The open house will include a presentation and hands-on visual survey activity (similar to the online survey described in Task 2.3 below). If possible, it will be scheduled to immediately follow the Task 2.1 project committee meeting.

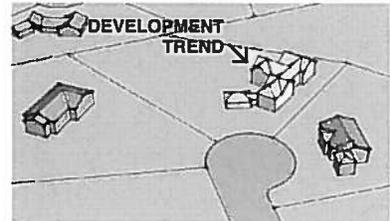
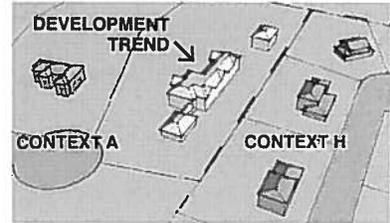
2.3 Conduct online visual survey.

The consultant will create an online visual survey for posting using Survey Monkey or a similar online service. The survey will use photographs and/or computer model images of pre- and post-ordinance construction to solicit feedback on recent trends. Questions to consider in Tasks 2.1-2.3 include:

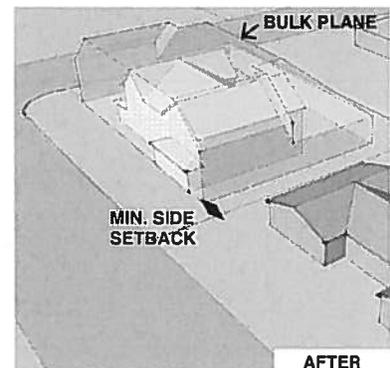
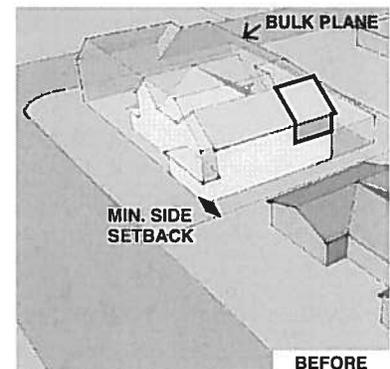
- Has the ordinance successfully addressed massing, privacy and character impacts identified in the residential development standards project?
- Has increasing the overall height limit facilitated more appropriate roof forms?

Task 2 Deliverables

- Memo summarizing results of visual survey
- Meeting/open house agendas and worksheets
- Presentation for open house
- Presentation boards for community open house (to include visual survey images)
- Online visual survey



Winter & Company generated computer models of existing conditions and development trends in a variety of neighborhood contexts throughout Cherry Hills Village for the 2010-2011 Residential Development Standards project.



Computer models illustrate the impact of the Cherry Hills Village bulk plane standard on building massing.

Task 3: Evaluation Report with Recommendations

Objectives for Task 3:

- Summarize the residential development standards evaluation, including recommended improvements
- Evaluate potential improvements or updates to existing design standards, including FAR, bulk plane and height limits

Subtasks:

3.1 Prepare draft #1 evaluation report.

The consultant will prepare an initial draft of the evaluation report, including preliminary ideas for updates or improvements.

3.2 Meet with the project committee to consider updates or improvements.

The consultant will help conduct a third meeting with the committee to consider a range of potential updates or improvements to residential development standards. These may include adjustments to:

- Bulk plane measurement system for sloping lots and associated submittal requirements
- Overall height measurement
- Floor area inclusions for FAR calculation (including basements, stairways or other floor areas)

The meeting will include review of an initial draft of the evaluation report.

3.3 Potential follow-up community open house.

Depending on the results/attendance at the Task 2 open house, the consultant will help conduct a follow-up open house to review ordinance improvements with the public. The open house could be scheduled to follow the Task 3.1 project committee meeting.

3.4 Potential check-in with Planning and Zoning Commission on evaluation progress and potential design standards improvements.

If desired, the consultant will provide an update on the progress of the evaluation and potential design standards improvements. This check-in could also occur during Task 2.

3.5 Prepare draft #2 evaluation report.

The consultant will prepare a final draft of the evaluation report, including recommended updates and improvements.

3.6 City Council/Planning and Zoning Commission presentation on evaluation report and recommendations.

The consultant will present final project results and recommendations to the City Council and Planning and Zoning Commission in a joint study session. If necessary, presentations could occur at separate City Council or Planning and Zoning Commission meetings.

Task 3 Deliverables

- Meeting/open house agendas and worksheets
- Presentations for the City Council and Planning and Zoning Commission
- Evaluation report with summary of trends, identified issues, options considered and recommendations on potential design standards updates or improvements (initial draft for committee review and final draft for City Council review)

Budget

Task 1. Initial Review of Construction Trends

- 1.1 Review construction data & plans
- 1.2 Review recent construction
- 1.3 Meet with the project committee
- 1.4 Meet with stakeholders

Personnel	Rate	Hrs.	Amount
N. Winter	\$170	2	\$340
A. Barge	\$105	30	\$3,150
B. Shears	\$60	4	\$240
Task 1 Fees			\$3,730

Task 2: Visual Evaluation of Ordinance Impacts

- 2.1 Meet with project committee
- 2.2 Conduct community open house
- 2.3 Conduct online visual survey

Personnel	Rate	Hrs.	Amount
N. Winter	\$170	4	\$680
A. Barge	\$105	40	\$4,200
C. Bostic	\$105	16	\$1,680
C. Ball	\$60	30	\$1,800
B. Shears	\$60	3	\$180
Task 2 Fees			\$8,540

Task 3: Evaluation Report with Recommendations

- 3.1 Prepare draft #1 report
- 3.2 Meet with project committee
- 3.3 Potential follow-up open house
- 3.4 Potential check-in with Planning and Zoning Commission
- 3.5 Prepare draft #2 report
- 3.6 City Council/Planning and Zoning Commission Presentation

Personnel	Rate	Hrs.	Amount
N. Winter	\$170	3	\$510
A. Barge	\$105	40	\$4,200
C. Bostic	\$105	10	\$1,050
C. Ball	\$60	14	\$840
B. Shears	\$60	6	\$360
Task 3 Fees			\$6,960

Total Fees			\$19,230
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Qualifications and Experience

Sample Winter & Company Experience with Design Standards & Guidelines

Cherry Hills Village, CO, Residential Development Standards

Winter & Company assisted the City of Cherry Hills Village with the drafting and adoption of new residential development standards including a bulk plane and floor area ratio (FAR) ordinance adopted in September, 2011.

Boulder, CO, Compatible Development in Single Family Neighborhoods

Winter & Company developed recommended policy updates to protect the character of residential neighborhoods, including analysis of alternative residential context sensitive design standards.

Chevy Chase, MD, Neighborhood Conservation Strategy

Winter & Company drafted a neighborhood conservation strategy and provided assistance with code revisions related to mass and scale.

Denver, CO, Comprehensive Zoning Code Update

Winter & Company was closely involved in the Denver Zoning Code Update, the most comprehensive form-based code project in the country. The update, adopted in 2010, provides standards that respond to traditional residential development patterns in a variety of contexts.

Winnetka, IL Residential Design Handbook

Winter & Company developed a residential design handbook and produced an analysis of the underlying zoning regulations relating to compatibility with neighborhood character and residential mass and scale.

✓ Building mass, divided into modules, fits with neighborhood scale.



✗ Building mass appears out of scale with neighborhood



Winter & Company's Residential Design Handbook for Winnetka, Illinois, illustrates appropriate and inappropriate building massing scenarios in a variety of contexts.

Project Personnel

Winter & Company is a planning and urban design firm based in Boulder that consults nationwide to public agencies, neighborhood associations and private property owners. Many projects focus on maintaining community character and protecting livability. A special area of emphasis is in balancing development regulations as established in underlying zoning codes with more discretionary design review guidelines.

Abe Barge, Senior Planner, will direct this project. He is currently working on historic preservation guidelines and neighborhood strategies for Pittsburgh, Pennsylvania, and a Main Street Implementation Plan for Mammoth Lakes, California. He directed the 2010-2011 Residential Zoning Standards project in Cherry Hills Village. Abe also recently completed zoning standards for traditional neighborhoods in Fort Collins, Colorado and Town Center Design Guidelines for Simsbury, Connecticut.

Cheney Bostic, Senior Urban Designer, will direct computer modeling of pre- and post-ordinance construction trends and assist with evaluation of measurement or other development standards improvements. Cheney has completed a range of urban design and form-based codes projects. She is currently working on a residential design evaluation for the City of Encinitas, California.

Noré Winter, Company President, will provide additional oversight and assistance. He has more than twenty-five years of experience in urban design and planning nationwide.



Several new homes under construction in Cherry Hills Village are making use of increased height allowed by the residential development standards ordinance for lot areas away from side and rear property lines.

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ITEM: 11C(ii)

MEMORANDUM

TO: HONORABLE MAYOR TISDALE AND MEMBERS OF THE CITY COUNCIL

FROM: EMILY KROPF, SPECIAL PROJECTS COORDINATOR

SUBJECT: OUTDOOR EMERGENCY WARNING SYSTEM REPORT

DATE: SEPTEMBER 2, 2014

INTRODUCTION:

The purpose of this report is to provide information to the City Council on installing an outdoor emergency warning system. Currently, the City does not have warning sirens located within its boundaries to notify the community of severe weather conditions (thunderstorm, tornado, flood, etc.) or other types of disasters (chemical spill, fire, evacuation, etc.).

BACKGROUND:

Existing Warning System

It was recently brought to staff's attention that two existing warning sirens owned and operated by the City and County of Denver were removed last December due to system upgrades. These sirens were located at Thomas Jefferson High School, 3950 S. Holly Street, and Samuels School, 3985 S. Vincennes Court. While the equipment was not installed within the City's boundaries, it was located nearby and provided warning to residents in the northern and eastern portions of the City (see Exhibit A for existing and current siren coverage). These sirens produce a tone at 70 decibels with a coverage radius of approximately 1 mile.

The City's emergency operations plan states that Arapahoe County Dispatch is the primary agency responsible for public notification (Exhibit B). It receives information from national and state warning systems, the National Weather Service, a network of spotters and reports from citizens. Warnings are to be disseminated to residents through the national emergency alert

CHERRY HILLS VILLAGE COLORADO

system, electronic media, public address systems, door-to-door and reverse 911. Residents receive reverse 911 calls through Arapahoe County's emergency alert program. The program allows residents to sign up for emergency alerts via cell phone, work phone, land line, text message and email (see Exhibit C for a description on the City's website). The alert program is not used for severe weather alerts, however, because the timeliness or accuracy of such warnings cannot be guaranteed. Other media outlets (television, radio and weather-related websites) are recommended for use instead.

Both the City of Cherry Hills Village and the City of Greenwood Village rely on the County's emergency alert program to notify residents of health and safety warnings but do not have outdoor systems for severe weather warnings. The City of Englewood uses sirens located throughout the community for notification of weather conditions and the County's alert program for other types of disasters. In 2012, Englewood received a grant from the Federal Emergency Management Agency (FEMA) to install five sirens that provide coverage to the majority of residents (Exhibit D). Other communities that utilize outdoor systems include: Denver, Aurora, Boulder, Commerce City, Lakewood and Wheat Ridge.

The City of Centennial recently studied the issue of emergency warning sirens and recommended that it invest in public education instead of installing an outdoor system (see Exhibit E for Centennial staff report). Encouraging the community to purchase weather radios and increasing awareness of environmental cues for severe weather was found to be a more cost-effective solution to improving public safety. Centennial staff reported that Arapahoe County and other surrounding counties were not susceptible to the three high risk factors associated with tornado activity that require short notice, including: tornadoes striking at night, hitting trailer parks or occurring during the off-season.

New Warning System

A new outdoor system would require constant supervision, which the City's Police Department is currently unable to provide. Dispatch services are managed by Arapahoe County, and the City's agreement with Arapahoe County does not cover operation of a siren system. Arapahoe County does not operate sirens for any municipalities in the area. Englewood has also confirmed that it would be unable to provide this service. Responsibility for activation of the system would have to be established, as well. For instance, Englewood's severe weather notification procedure states that the on-duty police or fire supervisor shall make a decision based on the information provided by the National Weather Service and observable weather conditions (Exhibit F).

The type of equipment that would be installed includes either electronic or electro-mechanical sirens (Exhibit G). Electronic sirens are battery powered with 2 amp electrical service and provide different tones, silent testing and live or pre-recorded announcements. Electronic sirens are able to produce silent testing through a 20 kilohertz tone that is inaudible. The majority of sirens used for the past 50 years are electro-mechanical. The tones are produced through blower

CHERRY HILLS VILLAGE COLORADO

motors that require 30 amp electrical service. Sirens can be added to existing wooden, steel or concrete poles as long as the weight of the equipment can be supported. Equipment must be located at least 40 feet from the ground. Underground power or solar supply can also be installed.

The state of Colorado does not have requirements for testing of equipment, but tests are generally conducted on a monthly basis. For example, Englewood tests its sirens on the second Wednesday of every month for a period of one minute. Denver and Aurora also test their sirens on the second Wednesday of every month. If an emergency occurs in Englewood, the sirens are activated for a period of three minutes, followed by a period of silence for five minutes and then another period of siren activation for three minutes. This rotation continues until the warning has expired for the area.

The total cost of an outdoor system varies based on the equipment selected and the number of sirens installed. The estimated cost of an electronic siren is approximately \$30,000 while electro-mechanical sirens range from \$10,000 to \$20,000 per siren. The installation of four sirens would provide coverage to the majority of residents in the City (see Exhibit H for proposed siren coverage). Fewer sirens could be used, however, depending on the equipment, location and decibel output. The National Weather Service and FEMA offer funding through grants for pre-disaster mitigation and community preparedness. Englewood was awarded \$41,654 by FEMA for the installation of its outdoor system. Denver and Aurora have not received grant funding for similar projects.

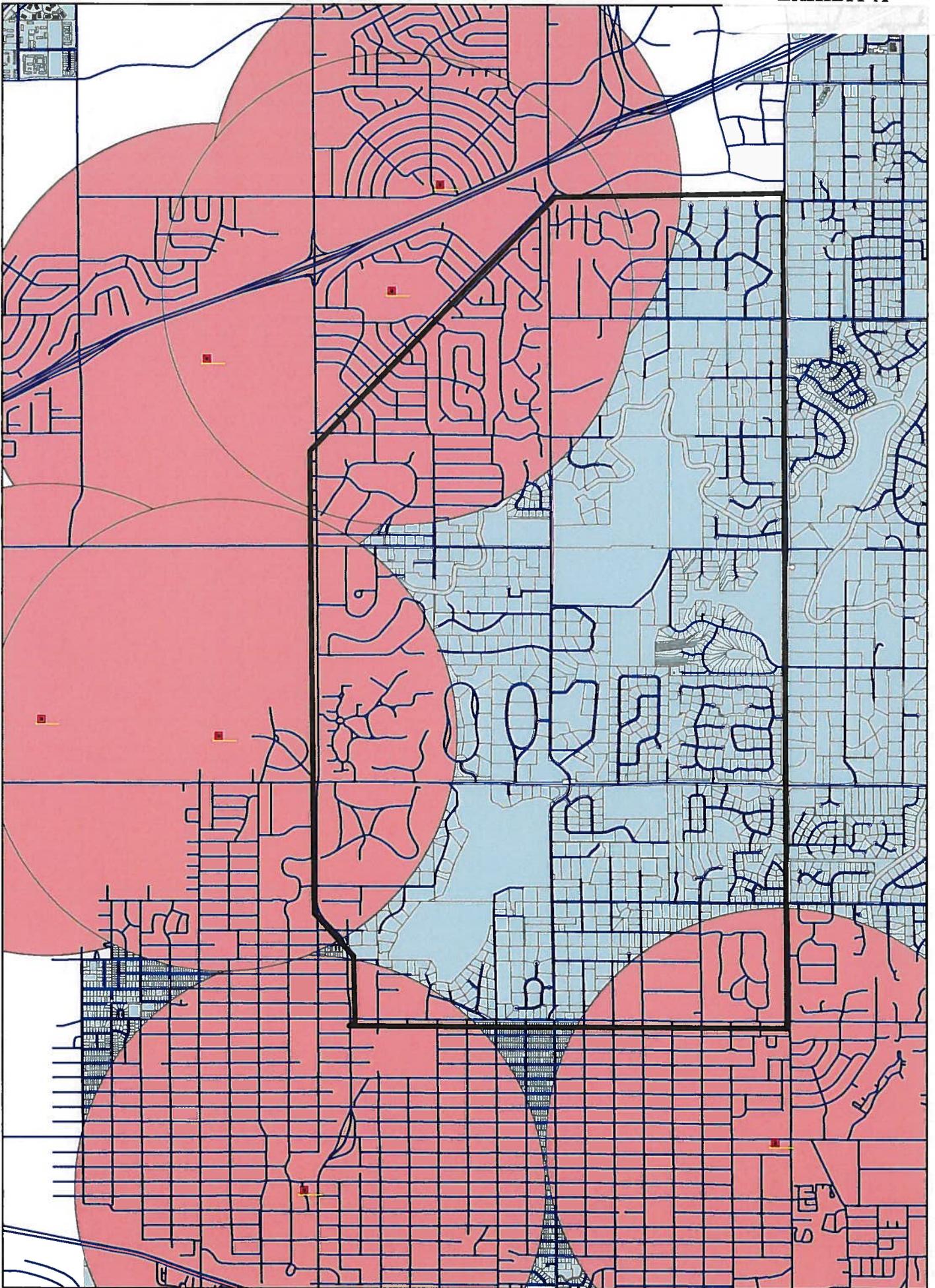
NEXT STEPS:

Staff is seeking direction from the City Council on whether the City should further explore installing an outdoor warning system or establishing a public education program. The City Council can also choose to take no action at this time. If staff is directed to further explore the installation of an outdoor system, operation of the system and responsibility for activation of the system would need to be addressed as they are unresolved issues. Staff can provide any additional information that the City Council requests.

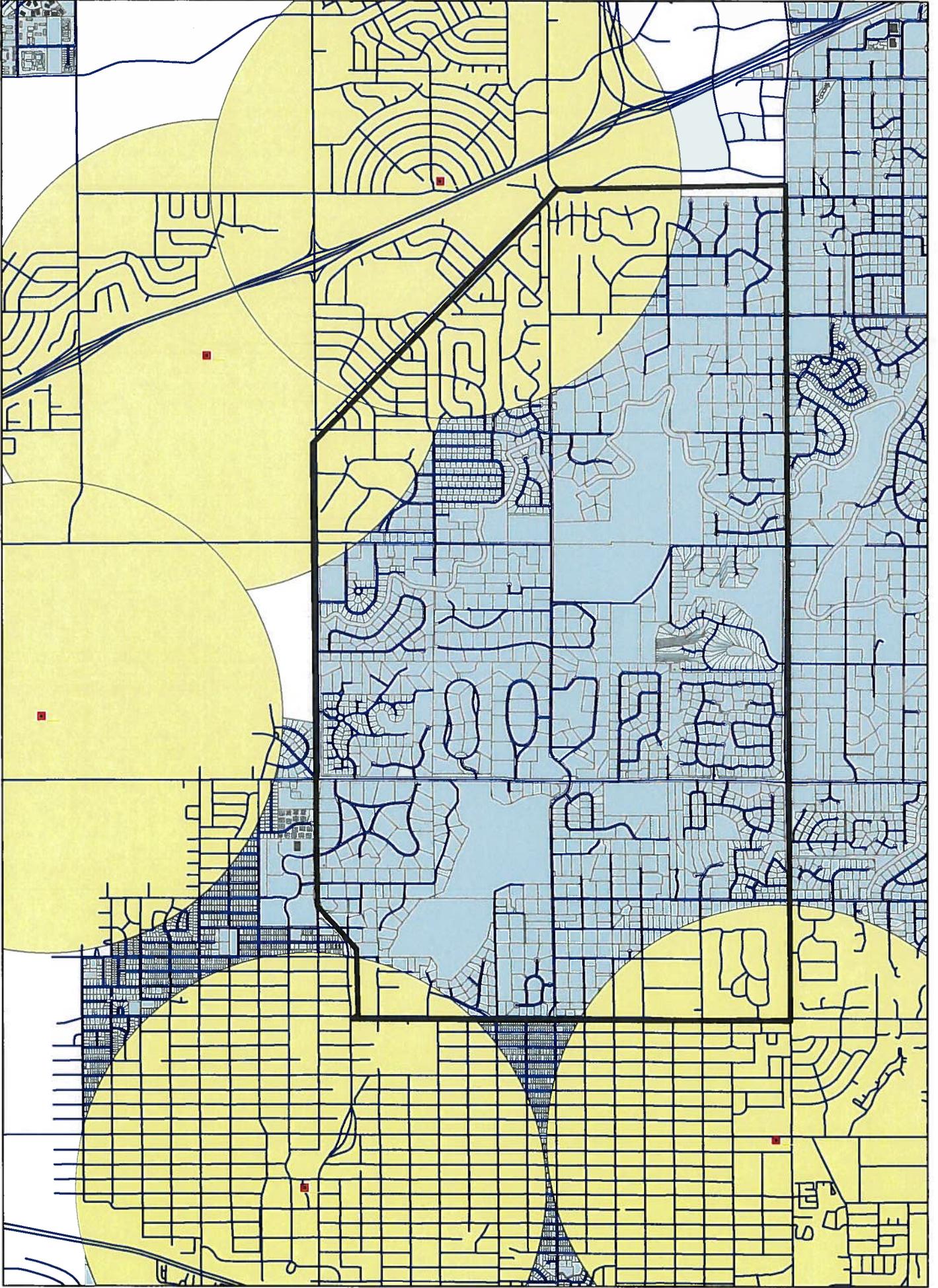
ATTACHMENTS:

- Exhibit A: Previous and Current Siren Coverage
- Exhibit B: Emergency Operations Plan
- Exhibit C: Arapahoe County Reverse 911
- Exhibit D: Englewood Siren Coverage
- Exhibit E: Centennial Staff Report
- Exhibit F: Englewood Severe Weather Notification Procedure
- Exhibit G: Electronic and Electro-Mechanical Siren Specifications
- Exhibit H: Proposed Siren Coverage

Previous Siren Coverage



Current Siren Coverage



EMERGENCY SUPPORT FUNCTIONS

The Emergency Support Function (ESF) annexes describe the functions that are most likely to be needed by the City during an incident or planned event. Not all ESFs will be activated during any given incident. Each incident will be evaluated and the ESFs most useful to the response effort will be activated and deployed in response to the incident. Each ESF will be assigned a Primary Agency for ESF administrative and operational duties and each ESF will be associated with support agencies having either jurisdictional or operational interest in the implementation of the Emergency Operations Plan.

Function	Support Agencies	Scope
Evacuation	Police Department Cherry Creek Public Schools RTD	<ul style="list-style-type: none"> • Resource transport • Evacuation
Communications/ Warning	Arapahoe County Dispatch Colo. Div. Emerg. Mgmt. Private Comms Agencies ARES	<ul style="list-style-type: none"> • Emergency Communications • Public Warning
Public Works & Engineering	Public Works Utilities Companies Community Development	<ul style="list-style-type: none"> • Infrastructure assessment • Snow removal • Water and sewer • Debris removal
Mass Care, (Housing & Human Services)	American Red Cross Salvation Army Tri-County Health Dept. of Human Services	<ul style="list-style-type: none"> • Sheltering • Mass Feeding • Evacuation
Resource Support	All Departments	<ul style="list-style-type: none"> • Resource Management • Purchasing
Health & Medical	South Metro Fire Rescue Tri-County Health Depart. Arapahoe County Coroner CDPHE	<ul style="list-style-type: none"> • Emergency Medical Services
Public Information	Police Department	<ul style="list-style-type: none"> • Emergency information • Rumor control • Media relations
Debris Management	Public Works	<ul style="list-style-type: none"> • Removal, collection and disposal of disaster debris
Disaster Reporting process	Administration	<ul style="list-style-type: none"> • Disaster declarations • Damage assessment

EMERGENCY SUPPORT FUNCTION

Communication and Warning

Primary Agency: Arapahoe County Dispatch

PURPOSE

To maintain communications during disasters and provide the resources necessary to warn the public of a pending or occurring emergency or disaster.

Planning Assumptions

- Communication systems are critical to life-saving operations. In the event that these systems are damaged, alternate systems such as the Arapahoe County Amateur Radio Emergency Services will be available to assist.
- If warning time is available the public will be alerted and provided with recommended protective actions that may help to lessen the impact of the emergency situations.

CONCEPT OF OPERATIONS

It is essential for the City of Cherry Hills Village to have reliable communications, warning capabilities, and coordination with other organizations.

- If activated, the Emergency Operations Center may provide centralized communications to field units and other organizations responsible for response and recovery efforts. Additional communication resources may be requested from the State of Colorado or through the Arapahoe County Office of Emergency Management.
- Mobile communications vans may be available from South Metro Fire Rescue or Arapahoe County as necessary for interoperable communications.
- Arapahoe County Dispatch will be the recipient of emergency information to be disseminated to the public.
- Information can come from a variety of sources including:
 - National and State Warning Systems messages over radio and the Colorado Crime Information Computer (CCIC).
 - National Weather Service (NWS) provides severe weather advisories, warnings and watches.
 - Spotters network.
 - Reports to 9-1-1 from citizens.

- Warnings will be disseminated to the public via:
 - Activation of the Emergency Alert System
 - Electronic media
 - Public address system
 - Door-to-door
 - Reverse 9-1-1

Wants to be distributed to the public

A solution of the Emergency Alert System

- Text messages
- Public address system
- Other ways
- Various other

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RESOURCES

Online Resources

City Resources:

- [Cherry Hills Village Website](#)
- [City Code Online](#)

Identity Theft

- [FTC - Your National Resource About Identity Theft](#)
- [FTC - Remedying the Effects of Identity Theft \(PDF 24KB\)](#)
- [FTC - What To Do If Your Personal Information Has Been Compromised](#)
- [U.S. Postal Inspection Service](#)
- [U.S. Secret Service](#)
- [Federal Deposit Insurance Corporation](#)

Court

- [Arapahoe County Court](#)

Animal Control/Parks

- [Englewood Off-Leash Parks](#)

Other

- [Arapahoe County Reverse 911](#)
- [Colorado Bureau of Investigation \(CBI\) Internet Criminal History Check](#)
- [Colorado DMV](#)
- [Emergency Preparedness Information](#)
- [Colorado State Patrol](#)
- [Colorado Online Accident Report](#)
- [Colorado State Patrol Aggressive Driver Reporting](#)
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Arapahoe County Sheriff's Office Accreditation

MetCom Accreditation

Littleton Police Department Reaccreditation

Public Services

The Arapahoe E911 Authority and its members provide the following services:

Emergency Notification System

The Arapahoe County E911 Authority, maintains an emergency notification system to alert citizens about emergencies. The emergency notification system enables the Police and Fire Agencies to provide essential information quickly in a variety of situations, such as fires, floods, evacuation of buildings or neighborhoods, and other emergencies.

How Emergency Alerts Work

When there is need to notify citizens about an emergency or potential safety concern, messages will be sent to all standard voice and text communication devices (land line, mobile, email, text messaging, pager, fax, etc.) that you have registered in the system.

Please note that this system will not be used for weather alerts because it cannot be guaranteed, as to the timeliness or accuracy of such alerts. There are a variety of other media outlets (TV and radio stations, and weather-related Web sites and alerts) that can provide this service in a timelier manner.

How to Sign Up for Emergency Alerts

Residents and businesses with land line phones are already listed in Arapahoe County's 9-1-1 database, and are therefore automatically included in the notification system.

If you would like to register additional voice and text devices, please open the link on the Home page "Citizen Notification" which will take you to the Everbridge Notification Sign Up page. All information you provide will be kept strictly confidential.

Emergency Information:

The Arapahoe County Emergency Communication Telephone Services Authority is the funding mechanism governing body for the Emergency 911 system for Arapahoe County, excluding Aurora.

We are not the agency to contact for emergency services, as we have no means of fielding incoming emergency calls or emails directly.

If you are searching for 911 services for one of the agencies and you are in need of emergency services, please dial 911 on your phone.

If you need to contact emergency services for someone in this area, but you are outside of the area, please attempt to contact one of the non-emergency phone numbers listed below for further assistance. It is not possible for you to reach our 911 dispatch centers from outside of Arapahoe County.

While the following numbers are for non-emergencies, if you are outside our area of coverage, these agencies can contact emergency services for you.

Non-Emergency Contact Information

AGENCY	CONTACT INFORMATION
Arapahoe County Sheriff's Office	Phone: (303) 795-4711 Web Site: http://www.co.arapahoe.co.us/Departments/SH/index.asp
Englewood Police/Fire Department	Phone: (303) 761-7410 Web Site: http://www.engagewoodgov.org
Glendale Police Department	

	Phone: (303) 759-1511 Web Site: http://www.glendale.co.us
Greenwood Village Police	Phone: (303) 773-2525 Web Site: http://greenwoodvillage.com
Littleton Fire Rescue	Phone: (303) 794-1555 Web Site: http://www.littletongov.org/index.aspx?page=277
Littleton Police Department	Phone: (303) 794-1551 Web Site: http://www.littletongov.org
South Metro Fire (MetCom)	Phone: (720) 258-8911 Web Site: http://www.southmetro.org

[Arapahoe County E 911 Strategic Plan](#)
[Arapahoe County 9-1-1 Gap Analysis Report](#)

[2010 Arapahoe County E 9-1-1 Authority Budget](#)

[2011 Arapahoe County E 9-1-1 Authority Budget](#)

[2012 Arapahoe County E 9-1-1 Authority Budget](#)

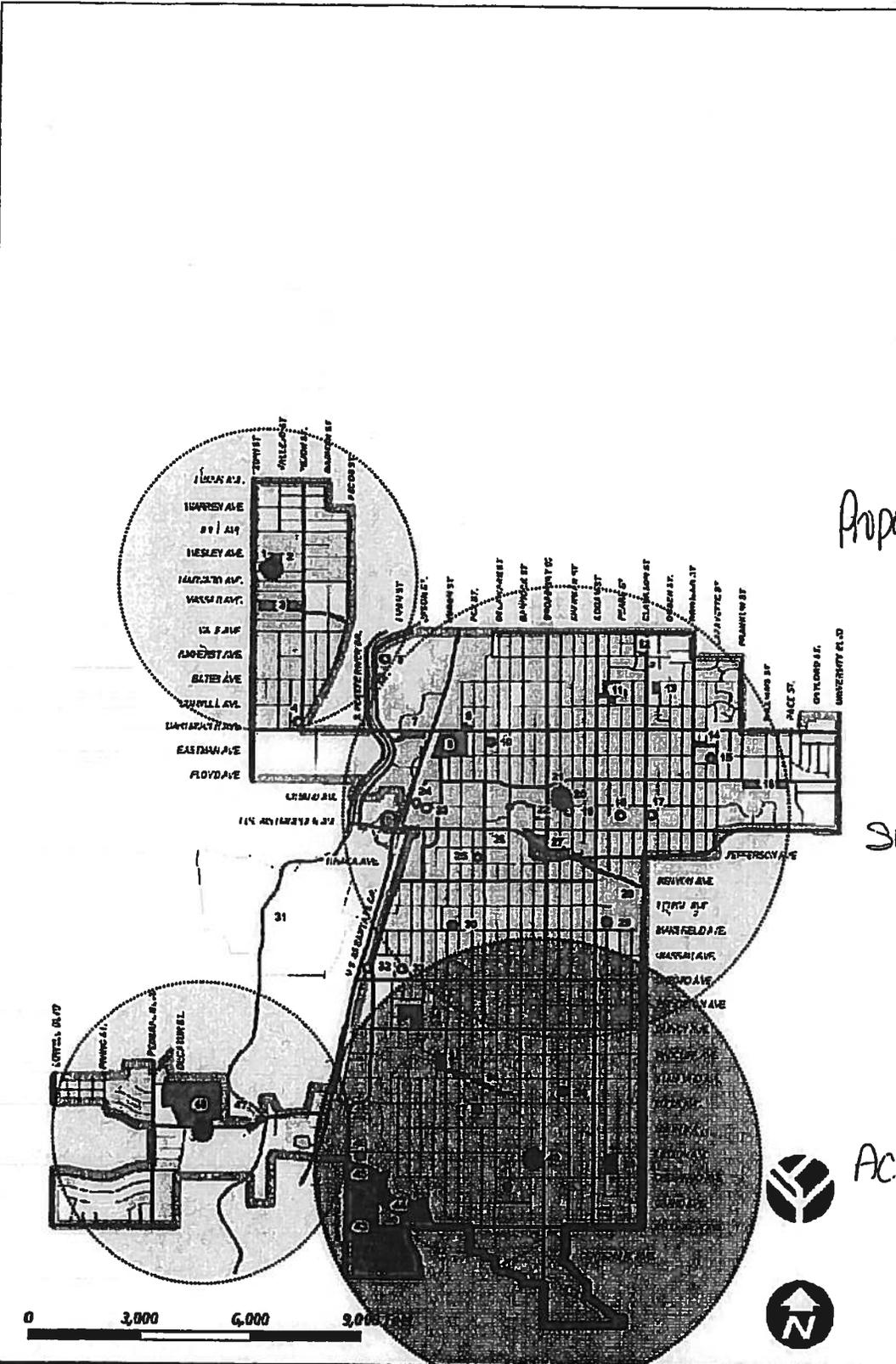
[2013 Arapahoe County E 9-1-1 Authority Budget](#)

[2014 Arapahoe County E 9-1-1 Authority Budget](#)

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	TITLE: Proposed Coverage Area ENGINEER: Englewood Civil Defense Streets COMPANY: Legacy Communications, Inc.	PREPARED BY: Kory Lippolis DATE: 4/13/2011
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City of Englewood, Colorado: General Reference Street Map

<ul style="list-style-type: none"> ■ City or Regional Park/Open Space ▨ City or School Rec. Facility/Field/Playground 	<ul style="list-style-type: none"> ○ Facilities ● Schools 	<ul style="list-style-type: none"> — Aterials and Collectors — Local Streets 	<ul style="list-style-type: none"> ▭ Englewood City Limits ~ South Platte River
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<ul style="list-style-type: none"> 1 20th Ave. North High School 2 24th St. L 3 1st Street 4 1st Street 5 Englewood Civic Center 6 1st Street 7 1st Street 8 1st Street 9 1st Street 	<ul style="list-style-type: none"> 10 1st Street 11 1st Street 12 1st Street 13 1st Street 14 1st Street 15 1st Street 16 1st Street 17 1st Street 18 1st Street 19 1st Street 	<ul style="list-style-type: none"> 20 Englewood High School 21 Englewood Elementary School 22 Englewood Municipal High School 23 Oxford Station 24 Englewood City Center 25 Englewood City Center 26 Englewood City Center 27 Englewood City Center 28 Englewood City Center 29 Englewood City Center 	<ul style="list-style-type: none"> 30 Englewood City Center 31 Englewood City Center 32 Englewood City Center 33 Englewood City Center 34 Englewood City Center 35 Englewood City Center 36 Englewood City Center 37 Englewood City Center 38 Englewood City Center 39 Englewood City Center
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City of Centennial

Staff Report

TO: Honorable Mayor Noon and Members of City Council

THROUGH: Jacque Wedding-Scott, City Manager

FROM: Mike Connor, Assistant City Manager
Jennifer Koscelnik, Executive Assistant
Jonathan Keck, Emergency Planning Intern

DATE OF MEETING: 8/02/2010

DATE OF SUBMITTAL: 7/23/2010

SUBJECT: Briefing on Emergency Warning Sirens

1. Statement of Issue:

On June 9, 2009, the City of Centennial experienced a tornado, hail and a severe thunderstorm in the eastern portion of the City. Some Centennial residents in the area heard warning sirens located in the City of Aurora. Others questioned why the City of Centennial does not have its own warning sirens for emergency events. Staff was asked to conduct an analysis of the issues, costs, and needs of establishing a network of the warning sirens throughout the City.

2. Discussion:

According to the Arapahoe County's Emergency Operations draft plan, the most serious threat the Centennial community might face is its vulnerability to natural hazards, which include severe summer storms resulting in lightning, hail, tornadoes, and flash flooding due to rainfall.

Information gathered by law enforcement agencies suggests that reverse 911 calls, emails, and text messages may not provide enough warning in times of severe weather, especially in the case of severe thunderstorms. During the Town of Windsor tornadoes in 2009, the reverse 911 system took forty minutes to call 8,000 people, by which time the tornadoes had come and gone. If it is accepted that the goals of providing emergency public information are for it to be timely, accurate and comprehensive, then warning sirens are often seen as a way to improve Public Safety. However, there are many concerns with actually implementing a warning siren system. Beyond the installation costs, which are not inconsiderable, there are the considerations of maintenance and testing to ensure that such a system works properly. This is not accounting for the fact that a successful system includes some amount of public education, necessitating further expenditures for some combination of various advertising and informational flyers, as well as public meetings. Provided below is an analysis of what sort of benefits a siren system might provide, but any benefits derived from this in Centennial must be weighed against the costs of operating a system.

Warning Sirens: There several different options of warning sirens (also known as "klaxons") available depending on a community's needs. They vary from one-cell speakers to those with up to ten cells. The number of cells determines the broadcasting range; the more cells, the better the range is supposed to be. Range claims by the manufacturer are going to differ from actual operational ranges for the sirens, which are impacted by local conditions. Warning sirens are affected by topographical features, buildings, land masses, wind, etc. As such, careful planning must be taken in not only determining siren placement in order to maximize performance, but also what *kinds of sirens* are used in what environment. It is important to remember that it is not possible to warn everyone, everywhere of a hazardous storm in the area, even with a siren system, as not everyone will be able to hear it.

In terms of operations, all sirens operate off specific radio frequencies so that they may be activated from a control area. There may also be activation options involving a computer dispatch system, but this would require further discussion with the siren vendor to determine costs and feasibility. Whatever option might be chosen, there are issues with control and management of the system. Talks with the Arapahoe County Sherriff's Office are ongoing on this subject, because they would be much better suited to manage and activate the system than the City at this time.

Reverse 911: Although effective and used for many different notifications, the E911 Authority Board does NOT use reverse 911 for weather related emergencies. They cite limited staffing and the fact that storms move more quickly than staff is able to send notifications via reverse 911 as reasons for this. Council is reminded that the Arapahoe County Sheriff's Office does not have authority over the E911 Authority Board.

Sirens in Surrounding Jurisdictions: It is important to note that the majority of sirens currently active in the surrounding area were installed as a means to warn for flooding, *not* for tornadoes.

Tornado Incidents in the area: On the National Climatic Data Center (NCDC) database which tracks severe weather incidents, NOAA (National Oceanic and Atmospheric Administration) reports that Arapahoe County has experienced 80 tornadoes since 1964. It is critical to remember that this is Arapahoe County as a whole, meaning that many of these storms have occurred far from City boundaries. *Combined, these 80 storms have caused 3 injuries.* Two of the three occurred at one of the more recent tornadoes which touched down in the Southlands Mall area in Aurora, which has an active warning siren system. The more critically injured of the two certainly cannot claim to have not been adequately warned of the approaching tornado as his injuries only occurred because he was out trying to film the tornado as it passed by. This is an important point which will be discussed below in further detail. The third injury occurred in a 2002 storm in an area that either now belongs to the City, or is bordered extremely close to it. Based on the information on the NOAA's website it was most likely an F1 scale storm (winds in the range from 86-110mph). The injury occurred when the tornado hit the construction trailer the man was trying to shelter in. In a scenario like this, a forewarning may not help because there were no adequate tornado shelters in the area.

Based on the hazard maps generated by DRCOG, there have been thirty tornadoes roughly within a five mile radius of the City of Centennial since 1955. A further breakdown of the storms indicates that of these thirty, fifteen were of the F0 category (wind speeds of 65-85mph), 12 were F1s (86-110mph), and 3 were F2 storms (111-135mph). It is perhaps worth noting that the City is also within the Special Wind Region as designated by the DRCOG, which means this region is susceptible to higher wind speeds, and thus potentially more damage. It is also a zone

which experiences all manner of severe summer storm activity, such as large-size hail, and a significant number of lightning strikes. *There is no record of an F3 or greater storm occurring in the vicinity of Centennial.*

Although, only two tornadoes have actually touched down within City limits, the proximity and occurrence of events in the surrounding area is an indicator of the potential threat of such an event within the City of Centennial.

Usefulness of Warning Sirens: Siren systems may well be most useful if a tornado occurs at night, which is the absolute worst case scenario as people are typically asleep without the means of a television/radio weather warning, or possible cell phone notification to alert them.

Things have changed with the development of cell phone alerts from the various local TV stations tied to National Weather Service alerts. Questions worth considering are how many people actually sign up for cell phone alerts, and of those, how many have their cell phones turned on so that they might be warned in the middle of the night? These are difficult questions to answer with little information readily available to assist. Even people with radio or TV access will most likely wake up from the sound of the approaching tornado and the associated debris as their first and only warning, giving them only a limited amount of time to seek shelter. The Hayden et al Study cites studies by Balluz et al (2000) and Noji (1997) which suggest that inadequate warnings are a primary contributor to deaths and injuries.¹

A community's response to warnings about severe weather is another item that should be considered when evaluating the benefits of warning systems. It is very common that in the face of less spontaneously developing severe storms, such as hurricanes, many residents directly in the bulls-eye of a storm will stubbornly ignore warnings to evacuate in favor of remaining with their homes in dangerous places. A problem worth considering is whether a siren system will encourage residents to come outside to look up at the sky rather than heading for a sheltered place. Many people like to film local weather events – do warning sirens actually encourage those people to get out their video cameras and start filming, as did the previously stated injured subject from the Aurora tornado in 2009? It is worth considering whether the sort of people who would heed to warnings being broadcast already takes certain precautions, such as paying attention to the weather, and/or receiving warnings from the National Weather Service or local news stations. This is where public education comes into play; if the sirens somehow encourage citizens to wander around outside looking at the funnel clouds descending on them, the system has failed.

Another issue for consideration is that Centennial is not a condensed community; as such, issuing an alert for one part of the City may mean that the other side of the City is unaffected. Frequent use may lead people to become accustomed to the sirens causing them to be ignored when a real danger approaches, because residents think the sirens are meant for another part of the City that's routinely affected. This has historically been a problem for other parts of the country, where warnings issued for an entire county often lure people into a false sense of security because past experiences lead them to believe that the warnings are meant for another part of the county when it's actually meant for their immediate area.

¹ M.H. Hayden, et al, "Information Sources For Flash Flood Warnings In Denver, CO and Austin, TX," *Environmental Hazards*, 2007, vol 7, pg 211-219.

A warning siren system might be used in the event of other severe weather, including winter storms, but this presents other problems and concerns. In some ways, this helps justify a warning siren system by making it more multi-purpose, but this practice is not encouraged. The danger is that overuse of the sirens may well confuse or “desensitize” the public, which then defeats the usefulness of the system.

Another challenge with siren warning systems is the fact that many houses, especially within the City, are constructed with double-paned windows, air conditioning units, and insulation, and unless someone lives almost directly under a klaxon, they may not be able to hear the warning no matter how efficiently it is broadcast. Warning sirens are in many ways, tools from another age, when civil defense from air raids and other perceived threats were deemed to be best handled by sirens for alerting and warning people.

A research study by Simmons and Sutter outlines three high risk factors: 1) tornadoes striking in the dead of night; 2) tornadoes hitting trailer parks; and 3) tornadoes in the off-seasons, like winter, when they are not expected.² None of these high risk factors are present in the data for Arapahoe or any of the surrounding counties. Nighttime tornadoes are quite rare in Colorado as a whole, and none have struck in the critical hour of midnight, when people are often caught most unaware. None of the tornadoes in Arapahoe County have struck in any time other than late spring to summer when they are expected as a part of Colorado severe weather. There are no mobile home trailer parks in the City of Centennial, which greatly mitigates the risk for injuries, since homes in this area generally have basements and relatively sturdy construction. The issue is not about preventing property damage; sirens do not prevent property damage, nor are they meant to. The question is whether sirens do enough to enhance the survivability of a tornado disaster for residents in the City. The areas which suffer very significant numbers of injuries and deaths have conditions which are not present in Centennial. Ultimately, the experiences of others cannot determine the policies of this City because the situation here is unique from all others.

Costs: Discussions with Denver County and Aurora have produced some interesting insights. According to Scott Field, Denver’s Deputy Director in the Office of Emergency Management and Homeland Security, Denver has an old electromechanical system which they will be replacing with 61 new electronic sirens which they estimate will cost around \$2.3 million for a complete installation. These will be solar powered and independent from the electrical grid allowing for operation even if an emergency knocks out power. Mr. Field is an advocate of sirens expressing his belief that they provide a good alert in times of a short notice emergency. The experiences of Weld County and Boulder with reverse 911, where residents often received the warning call *after* the event was over, were part of his rationale for the cost of a new system. In terms of funding, Denver has had trouble in accessing grant money. In a conversation with Mr. Field, Denver has tried to access funding from several grant sources, including stimulus funds, to no avail. Aurora has also never acquired any grants to fund their siren projects. Most of the federal grants seem to require matching funds on the part of the entity receiving the grant; in some cases this is a 75/25 split, with 75 percent of the funding coming from the grant. With the limited availability of grant monies, it is critical to consider the funding aspect of this system as the City would need to find other sources in which to pay for this project. It should also be noted that grant funding is unavailable for maintenance and upkeep – in the very unlikely event the City would be awarded federal or state funding for installation, it would still be necessary to budget upkeep costs for maintenance issues which will come up, especially as the system ages.

² Kevin M. Simmons and Daniel Sutter, “The Groundhog Day Florida Tornadoes: A Case Study of High-Vulnerability Tornadoes,” *Quick Response Report, Natural Hazards Center*, June 2007, no. 193

In discussing the issue of sirens with Matt Chapman, of the Office of Emergency Management in Aurora, many of the same points came up. Both Aurora and Denver have opted to not go with voice messages, even though their systems are capable of it. They believe voice messages do more harm than good, as people unable to understand the messages come out of their shelters in an attempt to hear them better, thus exposing them to the risk the sirens are warning them about. Aurora has 60 Whelen sirens of a variety of ages. Mr. Chapman estimated the cost of the newest of the sirens to be about \$30,000 each including complete installation. These sirens have an operational range of four thousand radial feet. The newest ones are five-cell Omni-Directional systems. Mr. Chapman mentioned that many of their sirens are solar powered, and while this is an excellent system, they can be costly in terms of upkeep as they can be broken by hail or vandalism. DRCOG Maps show that there has been a significant number of hail producing events; however, neither Denver nor Aurora have experienced substantial damage to their equipment from hail. They've also not experienced significant problems with vandalism. Overall they are satisfied with their systems' reliability and relatively straightforward maintenance, though it isn't necessarily inexpensive. Mr. Field indicated that replacement batteries would cost around \$3,200.

3. Recommendations:

Staff does not recommend the installation of a warning siren system at this time. Staff does recommend encouraging the public to invest in weather radios which are more reliable in broadcasting alerts that need to be observed, and do so in a much more precise manner than sirens. They can also provide more information that can be understood than in the case of warning sirens where voice broadcasts are more problematic than helpful. *Perhaps encouraging public awareness of the environmental cues which are indicators of the potential for tornadoes is another, more cost efficient step that can be taken that can also ensure that the City of Centennial is doing everything it can to improve public safety.*

It should be noted that many areas of the country right in the middle of 'tornado alley' which have trailer parks, and experience many more tornadoes than anything seen in Colorado do not have warning sirens in place. If areas which are more likely to experience very violent tornadoes and/or with greater frequency, do not have such systems in place, there may be a good reason for it, and the City should consider its own needs very carefully.

4. Alternatives:

Council could direct Staff to do a further study to provide more information on costs, operational and maintenance issues, and develop a more thorough coverage map for the City to be brought back at a later date.

5. Fiscal Impact:

Based upon range mapping, if at least 28 sirens are installed throughout the City, at a cost of \$30,000 each, the initial costs of such system would be over \$840,000. When vendors prepare a bid, they will complete an assessment of the area, wherein they will analyze the geographical and topographical aspects of the City to provide an accurate estimate of the actual number of sirens needed. As such, the best effect of broadcast ranges may require more sirens.

The on-going cost of the City's participation, activation, as well as ongoing maintenance, is difficult to determine. Such a system would require yearly maintenance in order to ensure it

functions properly, as well as timely repair of any damaged sirens. Aurora's 60 sirens, which vary in age, are estimated to cost between \$10-12,000 per year for the whole system. According to Mr. Chapman, much of this is due to the number of older sirens the City of Aurora has. Thus, Centennial can expect costs to go up as the system ages. Denver, which is replacing its old system, is not sure what maintenance will cost. They do believe that battery replacement will average out to \$100 per siren. At 60 sirens, that is about \$6,000 a year. Based on the information Mr. Field gave on an individual battery's cost of around \$3,200, they anticipate replacing two batteries every year. We do not know how often batteries will need to be replaced per klaxon. Most of these estimates are based on a sliding scale, with newer systems being less maintenance intensive at the outset, but becoming more expensive over time.

6. Next Steps:

Should Council direct Staff to do further investigation into this project, Staff will report back to Council with the requested information at a later date.

7. Previous Actions:

None.

Englewood Communications Center Standard Operating Procedures

SOP Number:

Effective Date: 04/01/2011

Review Date: 04/01/2015

Subject: **Severe Weather Notification**

Reviewed: Annually

01. Purpose

To provide essential information to on-duty personnel, city employees and citizens regarding severe weather events (storms, tornadoes, floods, etc.)

02. Scope

This SOP applies to all dispatchers.

03. Definitions

NWS – National Weather Service

Watch – When conditions are favorable for Severe Storms, Tornadoes or Flash Flooding.

Warning – When conditions indicate that Severe Storms, Tornadoes or Flash Flooding are *imminent*. People should immediately take cover in a sheltered area.

04. Policy

The Severe Weather Notification procedure should be used to notify on-duty personnel, city employees and citizens during severe weather events such as:

- Severe Storms
- Tornadoes
- Flash Flooding

*There may be other severe weather events when it may be appropriate to utilize the Severe Weather Notification procedure.

05. Procedures

A. Notifications (refer also to the Severe Weather Notification Checklist located in the forms drawer)

1. When the NWS issues a severe weather **Watch**, the following Police/Fire supervisors shall be notified:
 - i. Police Sergeant/MPO
 - ii. Fire Battalion Chief/Acting B.C

2. When the NWS issues a severe weather **Warning**, the following personnel/departments shall be notified:

- i. **Police**
 - 1. Sergeant/MPO
 - 2. APB to all units
- ii. **Fire**
 - 1. Battalion Chief/Acting B.C.
 - 2. APB to all units
- iii. **Public Works (x2520)**
- iv. **City Managers Office (x2311)**
- v. **Library (x2555)**

B. Tornado Warning – Alert Sirens

- 1. In the event that a Tornado Warning is received from the NWS, the on-duty Police or Fire supervisor, after having been notified, shall make the determination if the Alert Sirens should be activated. This decision should be based on the information provided by the NWS, along with observable weather conditions at that time.
- 2. If authorization is given to activate the Alert Sirens, the sirens shall be activated for a period of three (3) minutes. If the warning will be in effect longer than 10 minutes, the alert siren shall be sounded for three (3) minutes. After the three (3) minutes, shut the siren off, wait five (5) minutes and alert the siren again for three (3) minutes. This rotation shall continue until the warning has expired for the Englewood area.





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Frequently Asked Questions

[Sirens](#) [Solar Power](#) [Lightning](#)

While many communities still have mechanical sirens, they are being replaced by electromechanical sirens, or state of the art electronic sirens. The old mechanical sirens are no longer available, but our competition still refers to them. What is available today is electromechanical and electronic.



Sirens

Q. What is the difference between electronic and mechanical sirens? Are there other types of sirens?

A. Over the past 50 years outdoor warning siren technology has drastically changed to meet the demands of the purpose and use of the equipment. Sirens were originally manufactured for civil defense purposes. During World War II, the most common use of sirens was for signaling the threat of an air raid. Due to the nature of this type of warning and the lack of technology available at the time, the use of commercial power was the most effective means of producing high-powered sound.

An electro-mechanical siren is a fairly simple device. It consists of an electric motor that turns a fan called the "rotor" or "impeller", spinning inside a slotted drum called the "stator". However, over the years these sirens have evolved to combine the use of electronics to control the tonality of the moving parts in the form of timers, relays and radios thus rendering them reliable on technology.

The first job of the rotor is as a centrifugal fan. It pulls air into the siren axially through the intake, and blows it out radially through the holes in the stator. The second job of the rotor is to chop the incoming air stream into impulsive bursts. Vanes that periodically cover and uncover the holes in the stator segment the rotor. Each time the rotor and stator holes align, a burst of air is forced through. The frequency of these bursts is the pitch of the siren. The faster the motor turns the louder the noise. The

Q. What is the difference between high and low frequencies?

A. The frequency of a warning tone used in rating a siren's Sound Pressure Level is critical in evaluating the performance of an outdoor warning siren, where the siren's warning tones are expected to carry over great distances.

When siren systems are designed to optimize the production and projection of low frequency warning tones. It is documented that higher frequency tones attenuate (lose power) more over distance than low frequency tones.

A warning siren capable of producing 124 dB at 100 feet with a 500hz warning tone will be more effective than a siren producing 124 dB at 100 feet using a 1,000hz warning tone. This factor should be considered in planning a warning system.

Consider this example of the attenuation of higher frequency tones that is apparent in our everyday life. As you are standing out in your yard, your neighbor's teenage son has the stereo in his car blasting as he is coming down the road toward your house. The earth seems to shake as the "boom, boom, boom" of the low frequency bass notes are felt beneath your feet and on your ears. It is not until the car is very near to you that you can hear the high frequency acoustic guitar and voices. As the car passes you, these high frequency tones seem to disappear, but the pounding and thumping of the "boom, boom, boom" bass can still be heard and felt.

This scenario clearly demonstrates that



SIREN SOUND SAMPLES

RECORDED MESSAGE LIBRARY

SAMPLE BID SPEC and OTHER TECH NOTES

EMAIL

- technical solutions group
- support
- faq
- contact
- home

Pricing

Prices are subject to change



A typical WPS-2900 System consists of:
Field Equipment - \$15,753.00/per siren

Includes:

- WPS-2905 speaker assembly and electronics cabinet
- Two-way radio controls
- 960 second Digital Voice Board
- Intrusion Alarm
- Set Of Batteries

Optional Equipment (list prices)

- Solar Panels \$ 3,000.00
- SAM Siren Activation and Monitoring Software (No longer available)
- E-2010 Hardware Encoder/Decoder \$ 2,800.00
- E-969 1-way Hardware Encoder \$ 1,150.00

Installation prices range from \$3,500 - \$8,500
(Depending on pole type and location)

SafetyCom Standard Installation:

Includes, utility pole, pole top bracket, batteries, lightning arrestor, materials and labor.



A typical WPS-4004 System consists of:
Field Equipment - \$20,985.00/per siren

Includes:

- WPS-4004 speaker assembly and electronics cabinet
- Two-way radio controls
- 960 second Digital Voice Board
- Intrusion Alarm
- Set Of Batteries

Optional Equipment (list prices)

- Solar Panels \$ 3,000.00
- SAM Siren Activation and Monitoring Software (No longer available)
- E-2010 Hardware Encoder/Decoder \$ 2,800.00
- E-969 1-way Hardware Encoder \$ 1,150.00

Installation prices range from \$3,500 - \$8,500
(Depending on pole type and location)

SafetyCom Standard Installation:

Includes, utility pole, pole top bracket, batteries, lightning arrestor, materials and labor.

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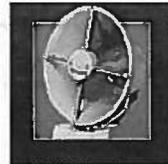
A typical VORTEX System consists of:
Field Equipment - \$16,390.00/per siren

Includes:
VORTEX(tm) R4 speaker assembly and electronics cabinet
Two-way RF control package
Intrusion alarm
Pole top bracket
Set of Batteries

Optional Equipment (list prices)
Solar Panels \$ 3,000.00
SAM Siren Activation and Monitoring Software (No longer available)
E-2010 Hardware Encoder/Decoder \$ 2,800.00
E-969 1-way Hardware Encoder \$ 1,150.00

Installation prices range from \$3,500 - \$8,500
(Depending on pole type and location)

SafetyCom Standard Installation:
Includes, utility pole, pole top bracket, batteries, lightning arrestor, materials and labor.



A typical Hornet System consists of:
Field Equipment - \$10,725.00/per siren

Includes:
Hornet speaker assembly and electronics cabinet
Two-way RF control package
Intrusion alarm
Pole top bracket
Set of Batteries

Optional Equipment (list prices)
Solar Panels \$ 3,000.00
SAM Siren Activation and Monitoring Software (No longer available)
E-2010 Hardware Encoder/Decoder \$ 2,800.00
E-969 1-way Hardware Encoder \$ 1,150.00

Installation prices range from \$3,500 - \$8,500
(Depending on pole type and location)

SafetyCom Standard Installation:
Includes, utility pole, pole top bracket, batteries, lightning arrestor, materials and labor.



A typical IPS System consists of:
Field Equipment - \$6,590.00/per unit

Includes:

IPS-800 electronics cabinet
Two-way radio controls
960 second Digital Voice Board
Set of Gel Cell Batteries
Speakers are not included

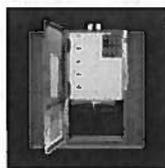
IPS Speakers:

WS15T wide angle, 15 watt loudspeaker \$ 180.00
WS15TR recessed mounting, 15 watt loudspeaker \$ 185.00
WS15TEN recessed mounting, 15 watt w/ grill \$ 335.00
WS30T wide angle, 30 watt loudspeaker \$ 210.00
WS60T wide angle, 60 watt loudspeaker \$ 600.00
WSXPL60T explosion-proof wide angle 60 watt \$ 1,045.00
WS100 wide angle, 100 watt loudspeaker \$ 410.00
WS100TCH wide angle, 100 watt, weatherproof \$ 645.00

Optional Equipment (list prices)

Strobe Controller \$ 490.00
Self-Contained Strobe Light/per \$ 435.00
WSHX024 Explosion-Proof Strobe Light (No longer available)
SAM Siren Activation and Monitoring Software (No longer available)
E-2010 Hardware Encoder/Decoder \$ 2,800.00
E-969 1-way Hardware Encoder \$ 1,150.00
Installation: Broad Range (Requires Estimate)

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A typical SIPS System consists of:
Field Equipment - (No longer available)

Includes:

SIPS-800 electronics cabinet
Two-way radio controls
240 second Digital Voice Board
Set of Gel Cell Batteries

IPS Speakers:

WS15T wide angle, 15 watt loudspeaker \$ 180.00
WS15TR recessed mounting, 15 watt loudspeaker \$ 185.00
WS15TEN recessed mounting, 15 watt w/ grill \$ 335.00
WS30T wide angle, 30 watt loudspeaker \$ 210.00
WS60T wide angle, 60 watt loudspeaker \$ 600.00
WSXPL60T explosion-proof wide angle 60 watt \$ 1,045.00
WS100 wide angle, 100 watt loudspeaker \$ 410.00
WS100TCH wide angle, 100 watt, weatherproof \$ 645.00

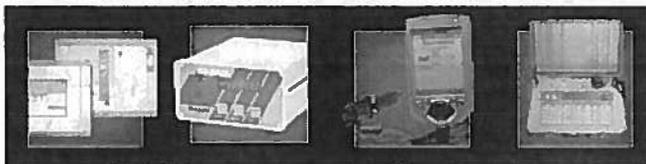
Optional Equipment (list prices)

Strobe Controller \$ 490.00
Self-Contained Strobe Light/per \$ 435.00

WSHX024 Explosion-Proof Strobe Light (No loger available)
SAM Siren Activation and Monitoring Software (No loger available)
E-2010 Hardware Encoder/Decoder \$ 2,800.00
E-969 1-way Hardware Encoder \$ 1,150.00
Installation: Broad Range (Requires Estimate)



Industrial Lighting Products
(call for quote)



Ancillary Products: (List Prices)

SAM: (No loger available)
E2010: \$2,800.00
E2010R: \$3,200.00
E969: \$1,150.00
E747: \$ 670.00
VA2000: \$1,600.00
VA300: (No loger available)
SDPT1: \$ 865.00
PT2010: \$ 6,700.00



Whelen Trailer Mounted Siren
(call for quote)

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resulting tone has a very unique sound. These devices are usually connected to a three phase, 208, 220 or 240VAC utility service and served their intended purpose very well but are costly to maintain due to the high volume of moving parts and are extremely limited in their ability to incorporate future technological advances.

During the "Cold War Era" the threat of a nuclear attack was at the forefront of concern. During this period, a civil defense fund was established by the United States Government to provide money for many cities throughout the U.S. to purchase sirens for civil defense threats (nuclear attack). Most cities updated their existing WWII era, air raid sirens to a newer version of the same technology, which is one reason that there are so many electro-mechanical sirens still in service today. As the availability of parts began to diminish, a new era of siren technology emerged.

In the early seventies, Whelen's engineers designed a 24-volt, DC powered siren that had a minimal amount of moving parts in order to provide uninterrupted siren communication in any weather scenario without the high cost of maintenance of its predecessor. These sirens produce their sound electronically via a tone generator that transmits a tone or voice signal into an amplified circuit, which passes it on to a speaker driver configuration thus resulting in an audible signal. These devices work exactly the same as your stereo, the more powerful the amplifier, the louder the sound. This design allows for both siren tones and voice announcements therefore making it's application much more versatile than that of the electro-mechanical variety. The Whelen sirens have undergone many modifications, have been constantly updated with the latest technology and are considered to be the cutting edge siren technology on today's market. Although our competition has tried to embrace the technology, Whelen manufactures and sells more electronic sirens that all of our competitors combined!

ability of the lower frequency tones to be heard at a farther distance than the higher frequency tones. In short, remember that not all 124 dB (at 100 feet) sirens are alike.

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Solar Power

Q. What should I be concerned about when using solar power as

Q. Are there any advantages to utilizing AC power as a primary

the only source of power for a public warning siren?

A. Solar power is a very good solution for power in electronic sirens due to their low consumption of power and high battery capacity. Solar power also allows for more freedom in system design. When designing an AC powered system one of the criteria used in determining feasibility of a location is whether or not a power source is available nearby. Therefore, in some instances, optimal locations have to be passed up for less desirable locations with access to utilities. Solar systems have become more and more prevalent over the past ten years as more of the old style electro-mechanical sirens have been replaced by electronic versions.

The most important consideration of using solar power as a primary source of power for a public warning system is that the combination of solar panel output and battery capacity must handle the siren standby power requirement, while also maintaining enough charge on the batteries to meet the run time requirements of the siren. This requirement varies with location, seasons and weather.

A solar powered siren depends on a properly sized battery bank for power during bad weather such as rain, snow or fog.

Whelen sirens have a battery capacity of 230 Amp-Hours. Typical standby current is about 50mA, therefore, after two weeks of total darkness, only 16.8 Amp-Hours of capacity has been drained from the batteries. There is still plenty of capacity for a number of siren tone activations.

All Whelen sirens are equipped with a large battery bank. The batteries actually power the siren during any warning tone or message. Therefore, any Whelen siren will meet its specified run time, regardless of whether it is powered by AC or solar.

In order to prevent damage to the solar panels from large, damaging hail, a Lexan® solar shield can be installed over the panels to allow for maximum protection without prohibiting the amount of light reaching the panels.

Q. What will happen during

means of power?

A. Absolutely not! On the contrary, today's siren systems are primarily used as warning devices for severe weather and other emergency conditions. Due to the volatility of high wind and lightning, which is almost always associated with severe weather, it is no longer feasible to depend on commercial (AC) power as a single source of power for sirens for obvious reasons. To overcome this concern, manufacturers of older-style (electro-mechanical) sirens redesigned their systems to allow for 48 volt operation which can be backed up by a 48 volt battery supply (four 12 volt batteries in series). This system typical operates as a back up power source whereas the primary source of power is provided by commercial (AC) power. In the event of a loss of AC power, the siren would switch to battery operation. As long as the batteries are in good condition, the siren system will operate until the batteries loose their capacity.

This capacity is the troubling part of this whole process whereas batteries that are not exercised routinely and maintain a constant charge have a proven tendency to loose their capacity under load after a very short period of time. This condition can only be diagnosed under load, as batteries will usually show acceptable voltage values at rest if they are being charged. Therefore, if the system has been up and operating for several months powered only by commercial (AC) power the battery may show acceptable voltage. However, if a storm was to take away the commercial (AC) power, and the system switched to battery power, upon activation of the siren, the amperage or capacity of the batteries may immediately drop out due to their lack of use. Most of us who use rechargeable batteries in our cell phones and cordless home phones have probably experienced a similar scenario with a battery that only lasts for a few minutes because of over charging on a routine basis.

The battery charger in the Whelen, electronic siren utilizes a computer-controlled thermistor connected to the battery series, which measures battery temperature, and voltage as well as cabinet temperature and applies the

inclement weather?

A. A solar powered siren depends on a properly sized battery bank for power during bad weather such as rain, snow or fog. A Whelen siren has a battery capacity of 230 Amp-Hours. Typical standby current is about 50mA, therefore, after two weeks of total darkness, only 16.8 Amp-Hours of capacity has been drained from the batteries. There is still plenty of capacity for a number of siren tone activities.

Q. How long will it take to recover to full charge?

A. Realistically, this is only critical if the batteries have been drained significantly, from considerable use. For example, ten activations at 3 minutes each.

A more likely scenario might be: Four activations at 3 minutes each, with a WPS2810. This means that 44 Amp-Hours of capacity has been used, therefore 44 Amp-Hours need to be replaced. An SBC260 solar option will supply approximately 3.37 Amps in good sunlight, therefore after 13 hours the batteries will be fully recharged. Remember that even without recharging the siren has battery capacity left for six more 3 minutes activations, in this example.

proper amount of charge accordingly. This method of charging known as "float charging" assures optimal battery life. Furthermore, as the electronic siren is DC only, the radios and other standby systems are constantly drawing on the batteries as are any tests, silent or audible. This constant drain on the batteries exercises the system, which maintains the amperage of the batteries. This is in stark contrast to a series of batteries that never see any drain and maintain a constant trickle charge.

The most common type of battery charger used in siren systems is known as a trickle charger. The trickle charge method is more likely to overcharge the batteries due to constant charging, which can cause early failure or even battery combustion hence the use of a separate battery compartment in most electro-mechanical sirens.

The battery charger's primary use in the Whelen system is to maintain the system battery supply to full capacity.

The Whelen siren utilizes two (2) twelve volt batteries in series to achieve it's required voltage of 24 volts. These batteries are locally available, sealed and maintenance free. DC powered systems are highly advantageous for life safety applications due to there lack of dependence of commercial power and regular use of batteries. In either scenario, the batteries will have to be maintained and changed out on a routine basis. Therefore it makes a whole lot more sense to purchase a system that actually utilizes it's batteries on a daily basis and requires one-half of the money to change out (two batteries vs. four per siren).

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Lightning

Q. Are Whelen electronic sirens more susceptible to lightning than our competitor's mechanical sirens?

A. No. Any siren sitting on a pole in the middle of an open area is susceptible to lightning. The key is how well the siren is protected from the inevitable strike.

Q. How does Whelen protect its sirens from lightning strikes?

A. Whelen engineers stress the importance of proper grounding to insure system protection. This ground system is not intended as a way of trying to prevent lightning strikes, but rather creates the perfect ground rod providing a path of low resistance.

Q. How will lightning damage a siren?

A. There are two basic ways that lightning can damage a siren. One way is from energy that is picked up through the atmosphere by a nearby strike. This energy is often coupled through the radio antenna or radio coax cable. The other way is from energy that is coupled onto the AC power lines, in the form of a voltage transient. In either case, the siren must be protected from the inevitable.

Q. Will lightning damage Whelen's non-metallic speakers more than a conductive, metal speaker?

A. No. Whelen's omni speakers are made of fiberglass reinforced Lexan® and Whelen's directional speakers are fiberglass.

In either case this is a non-conductive material. Lightning will seek the path of least resistance, which is the steel pole mounting bracket and its associated ground wire. The pole top mounting bracket is a nice lightning rod.

Most siren arrays are made of a metal substance, which is obviously conductive. As the Whelen speaker array is made of Fiberglass and Lexan, a non-conductive substance, it is isolated from ground. Ben Franklin's experiments taught us that lightning follows the path of least resistance. As fiberglass and Lexan are both highly resistant materials, the speaker array becomes a "Faraday Cage". Examples of a "Faraday Cage" are birds on a high-tension wire, a flying airplane or a vehicle with rubber tires. All of these things are isolated from an earth ground therefore preventing discharge.

Whelen's grounding system creates the perfect lightning rod by using the metal speaker bracket connected to ground by a four gauge solid copper wire. Whelen also utilizes bleed resistors to dissipate any electrical charge lingering along cable paths. This in no way implies that the Whelen siren will withstand every direct lightning strike without failure, but is meant to instill confidence in the sophisticated design, engineering and long-term useful life that is built in to every Whelen siren. Lightning protection also includes the installation of a Delta Lighting Arrestor at the AC service disconnect which utilizes a totally separate ground wire and rod to filter out any stray voltage or static energy residing on the electrical service input.

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Proposed Siren Coverage

