



CITY OF SURPRISE
Planning and Zoning Commission
16000 N. Civic Center Plaza
Surprise, AZ 85374
Thursday, August 6, 2026 @ 6:00 PM
COUNCIL CHAMBERS

- A. Call To Order
- B. Roll Call
- C. Pledge of Allegiance
- D. Current Events and Reports
- E. Staff Reports
- F. Planning and Zoning Commission Agenda:

CONSENT AGENDA:

Approval of the consent agenda may be by one motion and a passing vote by the Planning and Zoning Commission. There will be no separate discussion on these items unless a Commissioner requests such. The requested item for discussion will be removed from the consent agenda and considered in its normal sequence on the agenda.

- 1. Internal Consideration and action to approve or disapprove the July 16, 2026, Planning and Zoning Commission Regular Meeting Minutes. Community Development

REGULAR AGENDA ITEM - PUBLIC HEARING:

- 2. Citywide Consideration and action pertaining to a proposed Zoning Text Amendment (ZTA) to the Surprise Land Development Ordinances (LDO) related to Battery Energy Storage Systems (BESS). Case # FS23-1041 Chris Sexton Community Development

REGULAR AGENDA ITEM - NON-PUBLIC HEARING:

- G. Call To The Public

INSTRUCTIONS:

In order to address the Commission, you will need to fill out a Public Comment Form available at the entrance, and turn it in to the Secretary before the meeting begins.

You may also fill out the [Public Comment Form online](#). If submitting the online form, it must be received at least one hour before the meeting start time.

In accordance with A.R.S. 38-431.01(I) - During this time members of the public may address the "Commission" only on issues within the jurisdiction of the "Commission". At the conclusion of the open call, "Commissioners" may respond to criticism, may ask staff to review the matter or may ask that the matter be put on a future agenda.

Commissioners may not discuss or respond to matters raised during the call to the public that are not specifically identified on the agenda.

Each speaker shall be limited to three (3) minutes per item. If several speakers desire to speak regarding a single topic, the Chair may limit the number of speakers or the time given to each group. A maximum time of 30 minutes will be given per topic. However, an equal amount of time will be given to each side of an issue.

- H. Other Business and Future Agenda Items
 - I. Executive Session
- Pursuant to A.R.S. § 38-431.03

A. On a public majority vote of the members constituting a quorum, a public body may hold an

executive session but only for the following purposes:

2. Discussion or consideration of records exempt by law from public inspection, including the receipt and discussion of information or testimony that is specifically required to be maintained as confidential by state or federal law.
3. Discussion or consultation for legal advice with the attorney or attorneys of the public body.
4. Discussion or consultation with the attorneys of the public body in order to consider its position and instruct its attorneys regarding the public body's position regarding contracts that are the subject of negotiations, in pending or contemplated litigation or in settlement discussions conducted in order to avoid or resolve litigation.
7. Discussions or consultations with designated representatives of the public body in order to consider its position and instruct its representatives regarding negotiations for the purchase, sale or lease of real property.

J. Adjournment

KRISTI PASSARELLI, CITY CLERK

POSTED: Thursday, July 30th, 2026 @ 3:30 PM

Council chamber doors will be open at least 30 minutes prior to the start of the meeting.

SPECIAL NOTE: PERSONS WITH SPECIAL ACCESSIBILITY NEEDS, INCLUDING LARGE PRINT MATERIALS OR INTERPRETER, SHOULD CONTACT THE CITY CLERK'S OFFICE @ 623.222.1200 OR CLERK@SURPRISEAZ.GOV, BY NO LATER THAN 24 HOURS IN ADVANCE OF THE REGULAR SCHEDULED MEETING TIME.



CITY OF SURPRISE
Planning and Zoning Commission

Council Meeting Date: August 6, 2026 Contact Person:
Submitting Department: Community Development District: Internal
Staff Recommendations:

Consent: Yes Regular: No Public Hearing: No Report/Discussion: No

Agenda Wording:

Consideration and action to approve or disapprove the July 16, 2026, Planning and Zoning Commission Regular Meeting Minutes.

Motion:

I move to approve/disapprove the July 16, 2026, Planning and Zoning Commission Regular Meeting Minutes.

Background:

Objective Analysis:

Policy Compliant:

Financial Impact:

Budget Impact:

FTE Impact:

ATTACHMENTS:

1. 07-16-2026 MINS
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**CITY OF SURPRISE
PLANNING AND ZONING COMMISSION**

MEETING MINUTES

July 16, 2026 / 6:00 PM

**COUNCIL CHAMBERS
16000 North Civic Center Plaza
Surprise, AZ 85374**

CALL TO ORDER.

Chair Chapman called the Planning and Zoning Commission Meeting to order at 6:00 p.m. at Surprise City Hall, 16000 North Civic Center Plaza, Surprise, Arizona 85374, on July 16, 2026.

A. ROLL CALL

In attendance were Commissioner Kevin Perry, Commissioner Jay Leonard, Chair Ken Chapman, Vice Chair Anthony Spata, and Commissioner Dennis Bash. Commissioner Lisa Everett had an excused absence. Commissioner Jared Holland was absent.

B. STAFF PRESENT:

Bianca Cortez, Assistant City Attorney; Lloyd Abrams, Assistant City Manager and Director of Community Development; Leslie Carnie, Planner II; Sara Camarillo, Administrative Specialist, Sr.

COUNCIL MEMBERS PRESENT:

- None

C. PLEDGE OF ALLEGIANCE

D. CURRENT EVENTS REPORT

- None

E. STAFF REPORT

- None

CONSENT AGENDA:

Item 1 - Consideration and action to approve or disapprove the July 2, 2026, Planning and Zoning Commission Meeting Minutes.

Commissioner Bash made a motion to approve the July 2, 2026, Planning and Zoning Commission Regular Meeting Minutes. Commissioner Perry seconded the motion. Motion passed with 4 votes in favor. Commissioner Jay Leonard abstained. Commissioner Lisa Everett had an excused absence. Commissioner Jared Holland was absent.

REGULAR AGENDA ITEM – PUBLIC HEARING:

Item 2 - Consideration and action regarding a Conditional Use Permit (CUP) with Site Plan for a Zaxby's restaurant with drive-through facility on a site generally located on the southeast corner of 163rd Avenue and Pinnacle Peak Road. Case #FS25-0733.

Leslie Carnie, Planner II, presented item 2 to the Commission.

Chair Chapman opened the public hearing.

- None

Hearing no further requests, Chair Chapman closed the public hearing.

The Commission discussed the following:

- Seating indoors

Ben Breunig, development team for Zaxby's, shared the availability of indoor seating as well as a double drive-through.

Commissioner Leonard moved to approve the Conditional Use Permit with Site Plan for a Zaxby's restaurant with drive-through facility, Case# FS25-0733, subject to stipulations 'a' through 'e' as outlined in the Staff Report. Commissioner Bash seconded the motion. Motion passed with 5 votes in favor. Commissioner Lisa Everett had an excused absence. Commissioner Jared Holland was absent.

CALL TO THE PUBLIC:

- None

OTHER BUSINESS AND FUTURE AGENDA ITEMS:

- None

ADJOURNMENT:

Hearing no further business, Chair Chapman called for a motion to adjourn. Commissioner Leonard made a motion to adjourn. Commissioner Bash seconded the motion. All voted in favor.

Meeting adjourned at 6:09 pm.

Ken Chapman
Planning and Zoning Commission Chair

The foregoing instrument is a full, true, and correct copy of the original document on file in the office of the City Clerk, City of Surprise, Arizona.

ATTEST BY:

Sara Camarillo, Secretary

DATE:



CITY OF SURPRISE
Planning and Zoning Commission

Council Meeting Date: August 6, 2026 Contact Person: Chris Sexton
Submitting Department: Community Development District: Citywide
Staff Recommendations:

Consent: No	Regular: No	Public Hearing: Yes	Report/Discussion: No
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Agenda Wording:

Consideration and action pertaining to a proposed Zoning Text Amendment (ZTA) to the Surprise Land Development Ordinances (LDO) related to Battery Energy Storage Systems (BESS). Case # FS23-1041

Motion:

I move to recommend approval of the Zoning Text Amendment relating to BESS, Case FS23-1041 to Mayor and City Council to include a separation distance of 1,000 feet.
I move to recommend approval of the Zoning Text Amendment relating to BESS, Case FS23-1041 to Mayor and City Council to include a separation distance of 500 feet.
I move to recommend approval of the Zoning Text Amendment relating to BESS, Case FS23-1041 to Mayor and City Council to include a separation distance of 100 feet.
I move to recommend denial of the subject Zoning Text Amendment relating to BESS, Case FS23-1041 because insert reason.

Background:

On December 4, 2023, Staff initiated a Zoning Text Amendment ("ZTA") related to Battery Energy Storage Systems ("BESS"). In support of this effort, Staff reviewed BESS ordinances from multiple jurisdictions and engaged external stakeholders through two outreach meetings. The proposed ZTA is intended to establish a new overlay zone in addition to zoning criteria and development standards for BESS facilities while safeguarding the public health, safety, welfare, and overall quality of life of the general public.

Objective Analysis:

The proposed ZTA will provide regulatory framework, including zoning criteria and development standards applicable to the installation and use of BESS. The proposed regulations are intended to protect the public health, safety, welfare, and overall quality of life of the general public and ensure compatible land uses in the areas affected by BESS.

Policy Compliant:

The proposed Zoning Text Amendment is consistent with, and will help implement, the Surprise General Plan 2040.

Financial Impact:

The budget impact associated with the adoption of this Ordinance will be the cost to convert this Ordinance to MuniCode online for inclusion with the Surprise Municipal Code. The actual cost for conversion will be determined after the final document length is known.

Budget Impact:

There is no anticipated budget impact related to this item.

FTE Impact:

There will be no impact to FTE as a result of this Zoning Text Amendment.

ATTACHMENTS:

1. 00-FS23-1041 BESS Zoning Text Amendment Staff Report PZ
 2. 01-FS23-1041 BESS Zoning Text Amendment Legislative Edit_100ft
 3. 01-FS23-1041 BESS Zoning Text Amendment Legislative Edit_500ft
 4. 01-FS23-1041 BESS Zoning Text Amendment Legislative Edit_1,000ft
 5. 02-FS23-1041 BESS - ZTA - Citizen Participation Reports
 6. 03-FS23-1041 BESS - ZTA-Letters of Opposition and Support_Redacted
 7. FS23-1041 BESS Zoning Text Amendment - Presentation
-

Zoning Text Amendment

Report to the Planning and Zoning Commission

Case:	FS23-1041
Project Name:	Battery Energy Storage System (BESS) Zoning Text Amendment
Council District:	Citywide
Meeting Date:	August 6, 2026
Planner:	Chris Sexton, Senior Planner
Applicant:	City of Surprise
Request:	Zoning Text Amendment to the Surprise Land Development Ordinances (LDO) to establish a new Battery (B) overlay zone related to Battery Energy Storage System (BESS). Case FS23-1041.
General Plan Conformance:	The proposal is consistent with the Surprise General Plan 2040.
Support/Opposition:	Refer to the Citizen Participation Report and attached correspondence.
Staff Recommendation:	The Commission may move to recommend approval or denial to the Mayor and City Council, Case FS23-1041.

PROJECT DESCRIPTION:

The City has initiated this Zoning Text Amendment (ZTA) to the LDO in an effort to define Battery Energy Storage Systems and battery cabinets, establish a Battery (B) overlay zone and create use-specific development standards.

BACKGROUND:

On December 4, 2023, staff initiated a Zoning Text Amendment related to Battery Energy Storage Systems (BESS). In support of this effort, staff reviewed BESS ordinances from multiple jurisdictions and engaged external stakeholders through two outreach meetings.

Additionally, staff recently presented each item in separate work sessions to the Planning and Zoning Commission and the Mayor and City Council for review, discussion, and direction.

The proposed text amendment is intended to establish a new overlay zone in addition to zoning criteria and development standards for BESS while safeguarding public health, safety, welfare, and overall quality of life in the LDO.

ANALYSIS AND DISCUSSION:

This is a city-initiated ZTA to regulate the use and development of buildings, structures, and land associated with BESS. The proposed amendment aim is to: 1) define Battery Energy Storage Systems (BESS) and battery cabinets; 2) create a Battery (B) overlay zoning district; 3) establish a process for reviewing and approving the rezoning applications; and, 4) specify development standards for a BESS.

Staff reviewed BESS ordinances from external agencies and engaged external stakeholders through two separate outreach meetings.

Work sessions were held with the Planning and Zoning Commission and the City Council. Due to the scope of the discussion, the City Council work session continued into a second meeting.

The Planning and Zoning Commission expressed general support for the proposed use and text amendments. Discussion focused on noise, the exemption of batteries associated with rooftop solar installations, separation distance and setback requirements, economic impacts, project flexibility, and administrative discretion. Based on the discussion, the Commission reached a consensus to modify the proposed regulations by reducing the minimum separation distance from 1,500 feet to 100 feet and clarifying that batteries associated with commercial rooftop solar installations are exempt from the proposed requirements.

The Mayor and City Council expressed general support for the proposed use and text amendments. Similar to the Planning and Zoning Commission, the Council's discussion included noise, the exemption of batteries associated with rooftop solar installations, separation distance and setback requirements, economic impacts, project flexibility, and administrative discretion. A panel of industry representatives was invited to provide additional information regarding industry standards, BESS technology, and the design, construction, and operation of BESS facilities. Following the discussion, the Mayor and City Council provided direction to modify the proposed regulations by reducing the minimum separation distance from 1,500 feet to three different options of 1,000 feet, 500 feet and 100 feet and clarify that batteries associated with commercial rooftop solar installations are exempt from the proposed requirements. These modifications have been incorporated into the proposed ordinance presented for consideration.

The affected code sections for the proposed amendment include:

- 101-2 Rules of Interpretation and Glossary of Terms
- 106-9.2 Battery (B) overlay zone.

The full extent of the proposed changes is outlined in the attached Legislative Edit.

CITIZEN PARTICIPATION:

Two outreach meetings were held in the Overflow City Council room and Community Room at Surprise City Hall on January 30, 2025, and January 7, 2026, respectively. Public notice was provided in accordance with Arizona law and included publication in a newspaper of general circulation for the City of Surprise. A detailed summary of the outreach meeting can be found in the attached Citizen Participation Report.

CONFORMANCE WITH ADOPTED PLANS:

Surprise General Plan 2040:

The subject request is consistent with and will help implement the goals and policies of the Surprise General Plan 2040 related to energy, including goals 6.2 and 6.4. As the population grows and energy demand increases, it will help the area use energy more efficiently, depend less on traditional sources, and be better prepared for power disruptions.

SUMMARY:

The proposed Zoning Text Amendment to the Land Development Ordinances (LDO) will provide definitions for BESS and battery cabinets, establish a Battery (B) overlay zone, and create use-specific development standards.

RECOMMENDATION:

The Commission may move to recommend approval of case **FS23-1041** to the Mayor and City Council.

However, should the Commission wish to recommend denial of the request, the Commission should make its own findings and base its decision on those alternative findings.

Recommended Motions:

I move to recommend approval of the Zoning Text Amendment relating to BESS, Case FS23-1041 to Mayor and City Council to include a separation distance of 1,000 feet.

I move to recommend approval of the Zoning Text Amendment relating to BESS, Case FS23-1041 to Mayor and City Council to include a separation distance of 500 feet.

I move to recommend approval of the Zoning Text Amendment relating to BESS, Case FS23-1041 to Mayor and City Council to include a separation distance of 100 feet.

ATTACHMENTS:

01 ZTA Legislative Edit
02 Citizen Outreach Report – REDACTED
03 Letters of support/opposition
PPT

Chapter 101 ADMINISTRATIVE PROVISIONS

ARTICLE II. RULES OF INTERPRETATION AND GLOSSARY OF TERMS

Sec. 101-2.2. Glossary of terms.

- C. Definitions. The following additional words and phrases shall, for the purpose of this ordinance, have the following meanings:

Battery cabinet. A component of a Battery Energy Storage System (BESS) that is a self-contained, often modular, unit designed to securely house batteries, inverters, cooling systems, and fire management equipment.

Battery Energy Storage System (BESS). A facility consisting of electrochemical storage batteries, battery chargers, controls, power conditioning systems, and associated electrical equipment, assembled together, capable of storing energy in order to supply electrical energy at a future time, not to include any batteries or systems less than 5 megawatts that are accessory to a residential, commercial, industrial, or institutional facility.

Chapter 106 ZONING AND USE STANDARDS

ARTICLE IX. - OVERLAY ZONING DISTRICTS

Sec. 106-9.1. Planned unit development (P) overlay.

- A. Purpose. The planned unit *development* (PUD) overlay *zoning district* facilitates *development* by permitting flexibility to accommodate creative and imaginative designs that may not be possible under conventional regulations. It is intended to accommodate site constraints and unique circumstances that may include topography or *environmentally sensitive lands*.
- B. Applicability. The PUD overlay *zoning district* is permitted in all character areas as set forth in the General Plan. A PUD overlay *zoning district* provides for the establishment of distinct regulations as adopted by the city council. A PUD overlay may be applied to any *zoning district* in the city, except for the Surprise Heritage District (SHD), traditional neighborhood development (TND), or on any individual residential *dwelling*s. Where a provision in a PUD overlay *zoning district* varies from this ordinance, the provisions in the PUD overlay *zoning district* shall govern.
- C. Rationale. An application may request deviations from regulations in this *ordinance*, as permitted in this section. The proposal shall identify the various constraints associated with site and demonstrate how the design meets the following guiding objectives of a PUD overlay *zoning district*.
1. Development enriches the whole community through creating a unique sense of place for the residents within the PUD overlay *zoning district* as well as those in surrounding neighborhoods.
 2. Provide for a variety of coordinated and compatible land uses through innovative site planning.
 3. Create a higher standard of *development* than would be accomplished through the *development* of individual *parcels* through conventional *zoning* regulations.
 4. Planned and integrated comprehensive transportation systems for pedestrian and vehicular traffic as outlined in this *ordinance*, which may include provisions for mass transportation and *roadways*, bicycle or equestrian paths, pedestrian walkways and other similar transportation facilities to meet the site conditions.

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5. Preserve existing *environmentally sensitive lands* that exceeds the minimum open space area required in the ordinance and provide for and well-designed open space *amenities*.
 6. Fulfills the goals, objectives, and policies of the General Plan as well as specific plans for city areas that may include, but are not limited to cultural, educational, medical, and/or recreational facilities.
 7. Provide for a variety of housing types, employment opportunities, and commercial services to achieve a balanced community for families of a wide variety of ages, sizes, and levels of income.
 8. Site *structures* to take maximum advantage of the natural and man-made environment, provide view corridors, and minimize adverse environmental impact on surrounding areas during the *development* stages.
 9. Avoid premature or inappropriate *development* that would result in incompatible *uses* or would create traffic and *public* service demands that exceed the capacity of existing or planned facilities.
 10. All standards set forth in an approved PUD document shall carry the full force of law.
- D. Permitted uses.
1. All *uses* shall comply with the underlying *zoning district*.
- E. General regulations and permitted deviations.
1. The PUD overlay district may establish alternate standards for those found in **Chapter 106** and **Chapter 107**. Standards developed through the PUD overlay district *rezoning* process shall be appropriate to the location and context for the site for which the project is proposed. Standards created through the PUD overlay should also assist in the fulfillment of the goals, objectives, and policies in the General Plan. Approval of the standards is based on the *site plan* provided as part of the PUD.
 2. All PUD districts shall otherwise adhere to the regulations established in this *ordinance*. Any PUD overlay *zoning districts* containing standards that do not adhere to **Chapter 106** or **Chapter 107** shall be identified at the time of PUD zoning approval and shall be set forth in the *development plan*.

Sec. 106-9.2. Battery (B) overlay.

- A. Purpose. The battery (B) overlay *zoning district*, when combined with another zoning district, is intended to permit the use and development of buildings, structures and land associated with *battery energy storage systems* (BESS), which would otherwise be prohibited in conventional zoning districts. The battery overlay zoning district modifies the regulations of the zoning district it is combined with by providing specific regulations applicable to BESS. These specific regulations are intended to protect the health, welfare, safety, and quality of life for the general public and ensure land use compatibility.
- B. Applicability. This overlay zoning district shall not be combined with any other overlay zoning district. The battery overlay *zoning district* is permitted in all character areas as set forth in the General Plan. A battery overlay *zoning district* provides for the establishment of distinct regulations as adopted by the city council. A battery overlay may be applied to any *zoning district* in the city, except for the Surprise Heritage District (SHD), or on any individual residential *dwelling*s, subject to the requirements herein. Where a provision in a battery overlay *zoning district* varies from this ordinance, the provisions in the battery overlay *zoning district* shall govern.
1. A battery overlay zoning district shall be located no closer than one hundred feet (100') from any existing *dwelling* located within Surprise city limits. For purposes of this subsection, 'existing *dwelling*' shall include a built dwelling or an issued and active permit to construct a *dwelling*. Compliance with this separation requirement will be determined during the staff review of the type 3 rezoning application.

C. Process.

1. A type 3 rezone application is required to establish a battery overlay zoning district. A zoning narrative and preliminary site plan showing compliance with the regulations herein shall be submitted with the rezone application.
2. All development within a battery overlay zoning district is subject to the review and approval of a type 1 site plan application prior to any permit issuance. The site plan shall be in substantial conformance with the approved zoning narrative and preliminary site plan.
 - a. The Community Development Director or designee(s) shall determine whether or not the type 1 site plan application is in substantial conformance with the approved zoning narrative and preliminary site plan.
 - b. Any modifications to the site plan, at any time, that change or expand the site design beyond what was approved with the rezone application, as determined by the Community Development Director or designee(s), shall require another type 3 rezone application.

D. Development Standards. *Battery energy storage systems* (BESS) shall comply with the site design requirements set forth below in addition to all other applicable provisions of the Surprise Municipal Code:

1. Development within a battery overlay zoning district shall incorporate an eight foot (8') to twelve foot (12') tall perimeter wall around the BESS to provide screening and prevent unauthorized access to the facility. Walls shall be designed to include changes in the surface plane, variable heights, articulated recesses, and wall offsets to avoid the construction of long, unbroken and monotonous expanses of wall(s).
2. The perimeter wall shall be located no closer than one hundred fifty feet (150') from any property line.
3. Separation distances between *battery cabinets* within a BESS shall comply with the requirements of National Fire Protection Association (NFPA) 855, "Standards for the Installation of Energy Storage Systems."
4. Grading shall be minimized to maintain the natural landform.
5. All landscaping and other vegetation shall be maintained to be a minimum ten feet (10') from any buildings or equipment associated with the BESS.
6. A landscaped area with a minimum width of twenty-five feet (25') shall be provided along the outside of the perimeter wall. No landscaping shall be located inside the perimeter wall. All site landscaping shall comply with **Section 107-2**, unless otherwise noted herein.
7. All site lighting shall comply with **Section 107-3** herein.
8. On-site parking shall be provided as specified below:
 - a. For sites occupied daily by employees or contractors, one (1) parking space per employee or contractor shall be provided.
 - b. For unoccupied sites, one (1) on-site parking space shall be provided.
 - c. All parking, fire access roadways, and drive aisles shall be paved in accordance with **Section 107-4**.
9. *Battery cabinets* shall only provide access externally. Internal access or space for human occupancy is prohibited.
10. Any proposed signs, including any on-site safety signage, shall comply with **Chapter 109** herein.
11. The following plans, studies, and reports shall be submitted to the City for review with the type 1 site plan application. Approval of these plans, studies, and reports is required prior to site plan approval.

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- a. Hazardous Materials Impact Analysis (HMIA), in accordance with **Section 104-1.9**.
 - b. Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) in accordance with Appendix H of the International Fire Code, as adopted by the City.
 - c. Noise study performed by a third-party acoustical engineer that demonstrates that the BESS will not generate noise perceptible beyond the boundaries of the site pursuant to **Section 104-1.7**.
 - d. A report detailing the proper installation, use, and maintenance of 24/7 security, surveillance, and notification systems.
 - e. Commissioning Plan in accordance with National Fire Protection Association (NFPA) 855 and Underwriters Laboratories 9540 ("UL9540").
 - f. Decommissioning Plan in accordance with National Fire Protection Association (NFPA) 855.

Chapter 101 ADMINISTRATIVE PROVISIONS

ARTICLE II. RULES OF INTERPRETATION AND GLOSSARY OF TERMS

Sec. 101-2.2. Glossary of terms.

- C. Definitions. The following additional words and phrases shall, for the purpose of this ordinance, have the following meanings:

Battery cabinet. A component of a Battery Energy Storage System (BESS) that is a self-contained, often modular, unit designed to securely house batteries, inverters, cooling systems, and fire management equipment.

Battery Energy Storage System (BESS). A facility consisting of electrochemical storage batteries, battery chargers, controls, power conditioning systems, and associated electrical equipment, assembled together, capable of storing energy in order to supply electrical energy at a future time, not to include any batteries or systems less than 5 megawatts that are accessory to a residential, commercial, industrial, or institutional facility.

Chapter 106 ZONING AND USE STANDARDS

ARTICLE IX. - OVERLAY ZONING DISTRICTS

Sec. 106-9.1. Planned unit development (P) overlay.

- A. Purpose. The planned unit *development* (PUD) overlay *zoning district* facilitates *development* by permitting flexibility to accommodate creative and imaginative designs that may not be possible under conventional regulations. It is intended to accommodate site constraints and unique circumstances that may include topography or *environmentally sensitive lands*.
- B. Applicability. The PUD overlay *zoning district* is permitted in all character areas as set forth in the General Plan. A PUD overlay *zoning district* provides for the establishment of distinct regulations as adopted by the city council. A PUD overlay may be applied to any *zoning district* in the city, except for the Surprise Heritage District (SHD), traditional neighborhood development (TND), or on any individual residential *dwelling*s. Where a provision in a PUD overlay *zoning district* varies from this ordinance, the provisions in the PUD overlay *zoning district* shall govern.
- C. Rationale. An application may request deviations from regulations in this *ordinance*, as permitted in this section. The proposal shall identify the various constraints associated with site and demonstrate how the design meets the following guiding objectives of a PUD overlay *zoning district*.
1. Development enriches the whole community through creating a unique sense of place for the residents within the PUD overlay *zoning district* as well as those in surrounding neighborhoods.
 2. Provide for a variety of coordinated and compatible land uses through innovative site planning.
 3. Create a higher standard of *development* than would be accomplished through the *development* of individual *parcels* through conventional *zoning* regulations.
 4. Planned and integrated comprehensive transportation systems for pedestrian and vehicular traffic as outlined in this *ordinance*, which may include provisions for mass transportation and *roadways*, bicycle or equestrian paths, pedestrian walkways and other similar transportation facilities to meet the site conditions.

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5. Preserve existing *environmentally sensitive lands* that exceeds the minimum open space area required in the ordinance and provide for and well-designed open space *amenities*.
 6. Fulfills the goals, objectives, and policies of the General Plan as well as specific plans for city areas that may include, but are not limited to cultural, educational, medical, and/or recreational facilities.
 7. Provide for a variety of housing types, employment opportunities, and commercial services to achieve a balanced community for families of a wide variety of ages, sizes, and levels of income.
 8. Site *structures* to take maximum advantage of the natural and man-made environment, provide view corridors, and minimize adverse environmental impact on surrounding areas during the *development* stages.
 9. Avoid premature or inappropriate *development* that would result in incompatible *uses* or would create traffic and *public* service demands that exceed the capacity of existing or planned facilities.
 10. All standards set forth in an approved PUD document shall carry the full force of law.
- D. Permitted uses.
1. All *uses* shall comply with the underlying *zoning district*.
- E. General regulations and permitted deviations.
1. The PUD overlay district may establish alternate standards for those found in **Chapter 106** and **Chapter 107**. Standards developed through the PUD overlay district *rezoning* process shall be appropriate to the location and context for the site for which the project is proposed. Standards created through the PUD overlay should also assist in the fulfillment of the goals, objectives, and policies in the General Plan. Approval of the standards is based on the *site plan* provided as part of the PUD.
 2. All PUD districts shall otherwise adhere to the regulations established in this *ordinance*. Any PUD overlay *zoning districts* containing standards that do not adhere to **Chapter 106** or **Chapter 107** shall be identified at the time of PUD zoning approval and shall be set forth in the *development plan*.

Sec. 106-9.2. Battery (B) overlay.

- A. Purpose. The battery (B) overlay *zoning district*, when combined with another zoning district, is intended to permit the use and development of buildings, structures and land associated with *battery energy storage systems* (BESS), which would otherwise be prohibited in conventional zoning districts. The battery overlay zoning district modifies the regulations of the zoning district it is combined with by providing specific regulations applicable to BESS. These specific regulations are intended to protect the health, welfare, safety, and quality of life for the general public and ensure land use compatibility.
- B. Applicability. This overlay zoning district shall not be combined with any other overlay zoning district. The battery overlay *zoning district* is permitted in all character areas as set forth in the General Plan. A battery overlay *zoning district* provides for the establishment of distinct regulations as adopted by the city council. A battery overlay may be applied to any *zoning district* in the city, except for the Surprise Heritage District (SHD), or on any individual residential *dwelling*s, subject to the requirements herein. Where a provision in a battery overlay *zoning district* varies from this ordinance, the provisions in the battery overlay *zoning district* shall govern.
1. A battery overlay zoning district shall be located no closer than five hundred feet (500') from any existing *dwelling* located within Surprise city limits. For purposes of this subsection, 'existing *dwelling*' shall include a built dwelling or an issued and active permit to construct a *dwelling*. Compliance with this separation requirement will be determined during the staff review of the type 3 rezoning application.

C. Process.

1. A type 3 rezone application is required to establish a battery overlay zoning district. A zoning narrative and preliminary site plan showing compliance with the regulations herein shall be submitted with the rezone application.
2. All development within a battery overlay zoning district is subject to the review and approval of a type 1 site plan application prior to any permit issuance. The site plan shall be in substantial conformance with the approved zoning narrative and preliminary site plan.
 - a. The Community Development Director or designee(s) shall determine whether or not the type 1 site plan application is in substantial conformance with the approved zoning narrative and preliminary site plan.
 - b. Any modifications to the site plan, at any time, that change or expand the site design beyond what was approved with the rezone application, as determined by the Community Development Director or designee(s), shall require another type 3 rezone application.

D. Development Standards. *Battery energy storage systems* (BESS) shall comply with the site design requirements set forth below in addition to all other applicable provisions of the Surprise Municipal Code:

1. Development within a battery overlay zoning district shall incorporate an eight foot (8') to twelve foot (12') tall perimeter wall around the BESS to provide screening and prevent unauthorized access to the facility. Walls shall be designed to include changes in the surface plane, variable heights, articulated recesses, and wall offsets to avoid the construction of long, unbroken and monotonous expanses of wall(s).
2. The perimeter wall shall be located no closer than one hundred fifty feet (150') from any property line.
3. Separation distances between *battery cabinets* within a BESS shall comply with the requirements of National Fire Protection Association (NFPA) 855, "Standards for the Installation of Energy Storage Systems."
4. Grading shall be minimized to maintain the natural landform.
5. All landscaping and other vegetation shall be maintained to be a minimum ten feet (10') from any buildings or equipment associated with the BESS.
6. A landscaped area with a minimum width of twenty-five feet (25') shall be provided along the outside of the perimeter wall. No landscaping shall be located inside the perimeter wall. All site landscaping shall comply with **Section 107-2**, unless otherwise noted herein.
7. All site lighting shall comply with **Section 107-3** herein.
8. On-site parking shall be provided as specified below:
 - a. For sites occupied daily by employees or contractors, one (1) parking space per employee or contractor shall be provided.
 - b. For unoccupied sites, one (1) on-site parking space shall be provided.
 - c. All parking, fire access roadways, and drive aisles shall be paved in accordance with **Section 107-4**.
9. *Battery cabinets* shall only provide access externally. Internal access or space for human occupancy is prohibited.
10. Any proposed signs, including any on-site safety signage, shall comply with **Chapter 109** herein.
11. The following plans, studies, and reports shall be submitted to the City for review with the type 1 site plan application. Approval of these plans, studies, and reports is required prior to site plan approval.

-
- a. Hazardous Materials Impact Analysis (HMIA), in accordance with **Section 104-1.9**.
 - b. Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) in accordance with Appendix H of the International Fire Code, as adopted by the City.
 - c. Noise study performed by a third-party acoustical engineer that demonstrates that the BESS will not generate noise perceptible beyond the boundaries of the site pursuant to **Section 104-1.7**.
 - d. A report detailing the proper installation, use, and maintenance of 24/7 security, surveillance, and notification systems.
 - e. Commissioning Plan in accordance with National Fire Protection Association (NFPA) 855 and Underwriters Laboratories 9540 ("UL9540").
 - f. Decommissioning Plan in accordance with National Fire Protection Association (NFPA) 855.

Chapter 101 ADMINISTRATIVE PROVISIONS

ARTICLE II. RULES OF INTERPRETATION AND GLOSSARY OF TERMS

Sec. 101-2.2. Glossary of terms.

- C. Definitions. The following additional words and phrases shall, for the purpose of this ordinance, have the following meanings:

Battery cabinet. A component of a Battery Energy Storage System (BESS) that is a self-contained, often modular, unit designed to securely house batteries, inverters, cooling systems, and fire management equipment.

Battery Energy Storage System (BESS). A facility consisting of electrochemical storage batteries, battery chargers, controls, power conditioning systems, and associated electrical equipment, assembled together, capable of storing energy in order to supply electrical energy at a future time, not to include any batteries or systems less than 5 megawatts that are accessory to a residential, commercial, industrial, or institutional facility.

Chapter 106 ZONING AND USE STANDARDS

ARTICLE IX. - OVERLAY ZONING DISTRICTS

Sec. 106-9.1. Planned unit development (P) overlay.

- A. Purpose. The planned unit *development* (PUD) overlay *zoning district* facilitates *development* by permitting flexibility to accommodate creative and imaginative designs that may not be possible under conventional regulations. It is intended to accommodate site constraints and unique circumstances that may include topography or *environmentally sensitive lands*.
- B. Applicability. The PUD overlay *zoning district* is permitted in all character areas as set forth in the General Plan. A PUD overlay *zoning district* provides for the establishment of distinct regulations as adopted by the city council. A PUD overlay may be applied to any *zoning district* in the city, except for the Surprise Heritage District (SHD), traditional neighborhood development (TND), or on any individual residential *dwelling*s. Where a provision in a PUD overlay *zoning district* varies from this ordinance, the provisions in the PUD overlay *zoning district* shall govern.
- C. Rationale. An application may request deviations from regulations in this *ordinance*, as permitted in this section. The proposal shall identify the various constraints associated with site and demonstrate how the design meets the following guiding objectives of a PUD overlay *zoning district*.
1. Development enriches the whole community through creating a unique sense of place for the residents within the PUD overlay *zoning district* as well as those in surrounding neighborhoods.
 2. Provide for a variety of coordinated and compatible land uses through innovative site planning.
 3. Create a higher standard of *development* than would be accomplished through the *development* of individual *parcels* through conventional *zoning* regulations.
 4. Planned and integrated comprehensive transportation systems for pedestrian and vehicular traffic as outlined in this *ordinance*, which may include provisions for mass transportation and *roadways*, bicycle or equestrian paths, pedestrian walkways and other similar transportation facilities to meet the site conditions.

-
5. Preserve existing *environmentally sensitive lands* that exceeds the minimum open space area required in the ordinance and provide for and well-designed open space *amenities*.
 6. Fulfills the goals, objectives, and policies of the General Plan as well as specific plans for city areas that may include, but are not limited to cultural, educational, medical, and/or recreational facilities.
 7. Provide for a variety of housing types, employment opportunities, and commercial services to achieve a balanced community for families of a wide variety of ages, sizes, and levels of income.
 8. Site *structures* to take maximum advantage of the natural and man-made environment, provide view corridors, and minimize adverse environmental impact on surrounding areas during the *development* stages.
 9. Avoid premature or inappropriate *development* that would result in incompatible *uses* or would create traffic and *public* service demands that exceed the capacity of existing or planned facilities.
 10. All standards set forth in an approved PUD document shall carry the full force of law.
- D. Permitted uses.
1. All *uses* shall comply with the underlying *zoning district*.
- E. General regulations and permitted deviations.
1. The PUD overlay district may establish alternate standards for those found in **Chapter 106** and **Chapter 107**. Standards developed through the PUD overlay district *rezoning* process shall be appropriate to the location and context for the site for which the project is proposed. Standards created through the PUD overlay should also assist in the fulfillment of the goals, objectives, and policies in the General Plan. Approval of the standards is based on the *site plan* provided as part of the PUD.
 2. All PUD districts shall otherwise adhere to the regulations established in this *ordinance*. Any PUD overlay *zoning districts* containing standards that do not adhere to **Chapter 106** or **Chapter 107** shall be identified at the time of PUD zoning approval and shall be set forth in the *development plan*.

Sec. 106-9.2. Battery (B) overlay.

- A. Purpose. The battery (B) overlay *zoning district*, when combined with another zoning district, is intended to permit the use and development of buildings, structures and land associated with *battery energy storage systems* (BESS), which would otherwise be prohibited in conventional zoning districts. The battery overlay zoning district modifies the regulations of the zoning district it is combined with by providing specific regulations applicable to BESS. These specific regulations are intended to protect the health, welfare, safety, and quality of life for the general public and ensure land use compatibility.
- B. Applicability. This overlay zoning district shall not be combined with any other overlay zoning district. The battery overlay *zoning district* is permitted in all character areas as set forth in the General Plan. A battery overlay *zoning district* provides for the establishment of distinct regulations as adopted by the city council. A battery overlay may be applied to any *zoning district* in the city, except for the Surprise Heritage District (SHD), or on any individual residential *dwelling*s, subject to the requirements herein. Where a provision in a battery overlay *zoning district* varies from this ordinance, the provisions in the battery overlay *zoning district* shall govern.
1. A battery overlay zoning district shall be located no closer than one thousand feet (1,000') from any existing *dwelling* located within Surprise city limits. For purposes of this subsection, 'existing *dwelling*' shall include a built dwelling or an issued and active permit to construct a *dwelling*. Compliance with this separation requirement will be determined during the staff review of the type 3 rezoning application.

C. Process.

1. A type 3 rezone application is required to establish a battery overlay zoning district. A zoning narrative and preliminary site plan showing compliance with the regulations herein shall be submitted with the rezone application.
2. All development within a battery overlay zoning district is subject to the review and approval of a type 1 site plan application prior to any permit issuance. The site plan shall be in substantial conformance with the approved zoning narrative and preliminary site plan.
 - a. The Community Development Director or designee(s) shall determine whether or not the type 1 site plan application is in substantial conformance with the approved zoning narrative and preliminary site plan.
 - b. Any modifications to the site plan, at any time, that change or expand the site design beyond what was approved with the rezone application, as determined by the Community Development Director or designee(s), shall require another type 3 rezone application.

D. Development Standards. *Battery energy storage systems* (BESS) shall comply with the site design requirements set forth below in addition to all other applicable provisions of the Surprise Municipal Code:

1. Development within a battery overlay zoning district shall incorporate an eight foot (8') to twelve foot (12') tall perimeter wall around the BESS to provide screening and prevent unauthorized access to the facility. Walls shall be designed to include changes in the surface plane, variable heights, articulated recesses, and wall offsets to avoid the construction of long, unbroken and monotonous expanses of wall(s).
2. The perimeter wall shall be located no closer than one hundred fifty feet (150') from any property line.
3. Separation distances between *battery cabinets* within a BESS shall comply with the requirements of National Fire Protection Association (NFPA) 855, "Standards for the Installation of Energy Storage Systems."
4. Grading shall be minimized to maintain the natural landform.
5. All landscaping and other vegetation shall be maintained to be a minimum ten feet (10') from any buildings or equipment associated with the BESS.
6. A landscaped area with a minimum width of twenty-five feet (25') shall be provided along the outside of the perimeter wall. No landscaping shall be located inside the perimeter wall. All site landscaping shall comply with **Section 107-2**, unless otherwise noted herein.
7. All site lighting shall comply with **Section 107-3** herein.
8. On-site parking shall be provided as specified below:
 - a. For sites occupied daily by employees or contractors, one (1) parking space per employee or contractor shall be provided.
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 - c. All parking, fire access roadways, and drive aisles shall be paved in accordance with **Section 107-4**.
9. *Battery cabinets* shall only provide access externally. Internal access or space for human occupancy is prohibited.
10. Any proposed signs, including any on-site safety signage, shall comply with **Chapter 109** herein.
11. The following plans, studies, and reports shall be submitted to the City for review with the type 1 site plan application. Approval of these plans, studies, and reports is required prior to site plan approval.

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 - b. Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) in accordance with Appendix H of the International Fire Code, as adopted by the City.
 - c. Noise study performed by a third-party acoustical engineer that demonstrates that the BESS will not generate noise perceptible beyond the boundaries of the site pursuant to **Section 104-1.7**.
 - d. A report detailing the proper installation, use, and maintenance of 24/7 security, surveillance, and notification systems.
 - e. Commissioning Plan in accordance with National Fire Protection Association (NFPA) 855 and Underwriters Laboratories 9540 ("UL9540").
 - f. Decommissioning Plan in accordance with National Fire Protection Association (NFPA) 855.

Citizen Participation Report

Land Development Ordinance Zoning Text Amendment

January 30, 2025 – FS23-1041

PROJECT DESCRIPTION

A Zoning Text Amendment (ZTA) to the Surprise Land Development Ordinances (LDO) to create a zoning district and land use category for Battery Energy Storage Systems (BESS) and Hazardous Materials and to create associated use standards.

ADVERTISING

The meeting was advertised in two newspaper publications. The Phoenix Independent on Tuesday, January 14, 2025, and the Surprise Independent on Wednesday, January 22, 2025.

MEETING DESCRIPTION

The meeting was held at City Hall on January 30, 2025 at 6 p.m.

ATTENDANCE

There were sixteen (16) members of the public in attendance. None of the attendees opposed the amendment, however, participants did express concerns of the proposed text amendment. A list of questions and concerns is attached from the meeting.

Attendees

- City Staff: Chris Sexton, Trevor Fleetham, Lloyd Abrams, Jeanine Jerkovic
- Public: 16 people in attendance

Staff Question

- Is a BESS facility as an accessory use less intense and therefore should not be subject to the 1500 ft?
 - Suggestion was to create a threshold based on the size, number of cabinets, or megawatts
 - Chemistry would be the same but it's the size that's different
 - Fire codes may apply differently

Attendee Questions

- What's the risk to residents? Is 1500ft enough?
 - Lloyd explained that 1500 ft is based on evacuation distances from research on recent incidents
- What are the constraints and safeguards for hazardous materials storage adjacent to battery storage?
- Questions and concerns on amendment including both BESS and hazardous materials
 - One person stated preference for them to be separate since they're different use types
- Someone mentioned the thought of changing the wall standards to assist with safety concerns to help reduce the separation distance
- What are the plans with the two options presented?
 - Plan is to present both to PZ & CC
- Measure from dwelling unit rather than lot line
- Measure from BESS rather than lot line
- Is there any appetite for a lower distance requirement?
 - The city is likely going to proceed with 1500ft but will present the feedback and alternatives received
 - The stakeholders can state their case through the public process
- Would we entertain a waiver process?
 - No, not likely
- How will we present 1500ft vs. what the stakeholders want?
 - 1500ft is what planning and fire landed on but we will present the feedback received and suggested alternatives
- Will we provide a recommendation on this amendment?
 - No
- Have we looked at other jurisdictions?
 - Yes, but none in the valley are farther than we are in their amendment processes
 - We have shared our info with them
- Suggestion to look at ICMA
- Do any other uses have equal or similar buffers?
 - Medical marijuana
- Have we done an analysis on what land is available based on buffers?
 - No we have not but can look in to it

NAME	ADDRESS	EMAIL
✓ JEFF BELIE		
✓ DANIEL McNOHEN		
✓ KIM LN		
✓ COURT RICH		
✓ DAVID CUNELL		
✓ JAMES L. KIRK		
✓ Autumn Johnson		
✓ Andrew Draper		
✓ Andrew Yancey		
✓ JESSICA PENA		
✓ Andy Rubin		
✓ B. M. GARY		
✓ SHANE JOHANSEN		
✓ KETH NICHTE		

**State of Arizona:
County of Maricopa:
Affidavit of Publication**

I, Charlene Bisson, Arizona President/CEO of Independent Newsmedia Inc. USA, am authorized to make this affidavit of publication. Under oath, I state that the following is true and correct.

The **Phoenix Independent** (formerly the Daily Independent) is a newspaper which is published Tuesdays and Fridays, is of general circulation and is in compliance with the Arizona Revised Statutes 10-140.34 & 39-201 A & B. I solemnly swear that the notice was published in the regular and entire section of the said newspaper and not in any supplement. The below listed advertisement appeared in the following issue(s)

Phoenix Independent: 1/14/2025
Surprise Independent: 1/22/2025

Charlene Bisson

CHARLENE BISSON
President/CEO

Sworn to and subscribed before me this
1/24/2025

TERRI RODGERS



TERRI RODGERS
Notary Public

Name	CITY OF SURPRISE-Community Development
Order Number	14990
Ordered By	Chris Sexton
Order Date	1/9/2025
Description	FS23-1041
Number Issues	2
Pub Count	2
Order Cost	\$190.58
First Issue	1/14/2025
Last Issue	1/22/2025
Publications	Phoenix Independent, Surprise Independent

ZONING TEXT AMENDMENT
NEIGHBORHOOD MEETING

Please be advised that the City of Surprise will host a Neighborhood Meeting to discuss the Zoning Text Amendment (ZTA) to the Land Development Ordinances (LDO) referenced below. Any member of the public may participate in the conversations as it pertains to this project by attending in person. According to Surprise Municipal Code, city staff are required to host a Neighborhood Meeting to present the proposal to the public while soliciting feedback and providing answers to questions.

Applicant: City of Surprise
City of Surprise Planner: Chris Sexton, (623) 222-3134, christina.sexton@surpriseaz.gov

NEIGHBORHOOD MEETING DETAILS

DATE: Thursday, January 30, 2025
TIME: 6:00 PM
LOCATION: Surprise City Hall
Council Overflow Room
16000 N Civic Center Plaza
Surprise, AZ 85374

MEETING LOCATION



PROJECT DESCRIPTION:

A Zoning Text Amendment (ZTA) to the Surprise Land Development Ordinance (LDO) to create a land use category for Battery Energy Storage Systems (BESS) and Hazardous Materials and to create associated use standards, Case # FS23-1041.

Publish: Phoenix Independent, January 14, 2025, Surprise Independent, January 22, 2025/14990

**State of Arizona:
County of Maricopa:
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Charlene Bisson

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Please be advised that the City of Surprise will host a Neighborhood Meeting to discuss the Zoning Text Amendment (ZTA) to the Land Development Ordinances (LDO) referenced below. Any member of the public may participate in the conversations as it pertains to this project by attending in person. According to Surprise Municipal Code, city staff are required to host a Neighborhood Meeting to present the proposal to the public while soliciting feedback and providing answers to questions.

Applicant: City of Surprise
City of Surprise Planner: Chris Sexton, (623) 222-3134, christina.sexton@surpriseaz.gov

NEIGHBORHOOD MEETING DETAILS

DATE: Thursday, January 30, 2025
TIME: 6:00 PM
LOCATION: Surprise City Hall
Council Overflow Room
16000 N Civic Center Plaza
Surprise, AZ 85374

MEETING LOCATION



PROJECT DESCRIPTION:

A Zoning Text Amendment (ZTA) to the Surprise Land Development Ordinance (LDO) to create a land use category for Battery Energy Storage Systems (BESS) and Hazardous Materials and to create associated use standards, Case # FS23-1041.

Publish: Phoenix Independent, January 14, 2025, Surprise Independent, January 22, 2025/14990

Citizen Participation Report

Land Development Ordinance Zoning Text Amendment

January 7, 2026 – FS23-1041

PROJECT DESCRIPTION

A Zoning Text Amendment (ZTA) to the Surprise Land Development Ordinances (LDO) to create a zoning district and land use category for Battery Energy Storage Systems (BESS) with associated use standards.

ADVERTISING

The meeting was advertised in two newspaper publications. The Phoenix Independent on Friday, December 19, 2025, and the Surprise Independent on Wednesday, December 24, 2025.

MEETING DESCRIPTION

The meeting was held at City Hall on January 30, 2025 at 6 p.m.

ATTENDANCE

There were fifteen (15) members of the public in attendance. None of the attendees opposed the amendment, however, participants did express concerns of the proposed text amendment. A list of questions and concerns is attached from the meeting.

BESS Neighborhood Meeting 1/7/26

Comments

- An attendee asked for clarification on residential uses
- Someone asked about process and public hearings
 - Take feedback and finalize
 - Work sessions with P&Z and Council
 - Public hearings
- What's the reason for 1500' separation?
 - Public health and safety
- Comment made about recent SRP event where fire fighters were standing 150 feet away with no issues
- Waiver option?
- When does the existing residential take a effect?
 - Once the zoning entitlement for BESS takes effect it would lock it in regardless of dwelling units that come in after
- Power grid improvements and beneficial impact on tech business
 - Having a restrictive ordinance will be a hinderance to jobs and economic development
 - Need to promote infrastructure development
- Add clarification for utility scale
- Buckeye – 150'. Maricopa county – no additional setback.
- Question about comments previously made and if they need to resubmit them
- Question about 10' separation between containers
 - NFPA is 3'
- Why are we doing a BESS specific district rather than energy in general?
- We need these facilities for the benefit of the grid and the increased demand
- There are economic development/job ramifications if we don't have the power to provide commercial developments
- Ramifications of our 1500' proposal on other community's proposals
- Question about phasing and expansion as it relates to the compliance with the site plan that was presented to the Council
- Why are we being so restrictive to just BESS as opposed to other technologies or energy types?
- Question about the 60 dBA requirement (too low) – recommended 85 dBA
 - Add consideration for ambient noise level
- Question about district and separation and another way around that

Neighborhood Meeting – Sign In Sheet 1/7/26

	Name	Address	Email
1	Michael Conover		
2	Johnny Martin		
3	Caleb Wicks		
4	Jessica Pliny		
5	Jeremy Akim		
6	Jeff Bell		
7	Susan Draper		
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Neighborhood Meeting – Sign In Sheet 1/7/26

	Name	Address	Email
1	Arthur Johnson		
2	Andrew Munder		
3	Carah New		
4	Ed Phillips		
5	Gregory Allard		
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Sworn to and subscribed before me this
12/30/2025

TERRI RODGERS



TERRI RODGERS
Notary Public

Name	CITY OF SURPRISE - Community Development
Order Number	35357
Ordered By	Chris Sexton
Order Date	12/16/2025
Description	FS23-1041 Bess
Number Issues	2
Pub Count	2
Order Cost	\$164.74
First Issue	12/19/2025
Last Issue	12/24/2025
Publications	Phoenix Independent, Surprise Independent

**DEVELOPMENT PROJECT
NEIGHBORHOOD MEETING**

Please be advised that the City of Surprise will host a Neighborhood Meeting to discuss a Zoning Text Amendment (ZTA) to the Land Development Ordinance (LDO), as referenced below. Any member of the public may participate in this conversation as it pertains to this project by attending in person. According to Surprise Municipal Code, we are required to host a Neighborhood Meeting to present the proposal to the public while soliciting feedback and providing answers to questions.

Applicant: City of Surprise
City of Surprise: Chris Sexton; 623-222-3134;
christina.sexton@surpriseaz.gov

NEIGHBORHOOD MEETING DETAILS

DATE: Wednesday January 7, 2026
TIME: 6:00PM
LOCATION: Surprise City Hall
Community Room
16000 N Civic Center Plaza
Surprise, AZ, 85374

Meeting Location

PROJECT DESCRIPTION:
A Zoning Text Amendment (ZTA) to the Surprise Land Development Ordinance (LDO) to create a zoning district and land use category for Battery Energy Storage Systems (BESS) with associated use standards, Case # FS23-1041.

Publish: Phoenix Independent, December 19, 2025, Surprise Independent, December 24, 2025/35357

State of Arizona:
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January 30, 2025 – FS23-1041

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- Measure from BESS rather than lot line
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 - No, not likely
- How will we present 1500ft vs. what the stakeholders want?
 - 1500ft is what planning and fire landed on but we will present the feedback received and suggested alternatives
- Will we provide a recommendation on this amendment?
 - No
- Have we looked at other jurisdictions?
 - Yes, but none in the valley are farther than we are in their amendment processes
 - We have shared our info with them
- Suggestion to look at ICMA
- Do any other uses have equal or similar buffers?
 - Medical marijuana
- Have we done an analysis on what land is available based on buffers?
 - No we have not but can look in to it

NAME	ADDRESS	EMAIL
✓ JEFF BELIE		
✓ DANIEL McNOHEN		
✓ KIM LN		
✓ COURT RICH		
✓ DAVID CANNELL		
✓ JAMES L. KIRK		
✓ Autumn Johnson		
✓ Susan Draper		
✓ Andrew Yancey		
✓ JESSICA PENA		
✓ Andy Rubin		
✓ B. M. GARY		
✓ SHANE JOHANSEN		
✓ KETH NICHTE		

Citizen Participation Report

Land Development Ordinance Zoning Text Amendment

January 7, 2026 – FS23-1041

PROJECT DESCRIPTION

A Zoning Text Amendment (ZTA) to the Surprise Land Development Ordinances (LDO) to create a zoning district and land use category for Battery Energy Storage Systems (BESS) with associated use standards.

ADVERTISING

The meeting was advertised in two newspaper publications. The Phoenix Independent on Friday, December 19, 2025, and the Surprise Independent on Wednesday, December 24, 2025.

MEETING DESCRIPTION

The meeting was held at City Hall on January 30, 2025 at 6 p.m.

ATTENDANCE

There were fifteen (15) members of the public in attendance. None of the attendees opposed the amendment, however, participants did express concerns of the proposed text amendment. A list of questions and concerns is attached from the meeting.

BESS Neighborhood Meeting 1/7/26

Comments

- An attendee asked for clarification on residential uses
- Someone asked about process and public hearings
 - Take feedback and finalize
 - Work sessions with P&Z and Council
 - Public hearings
- What's the reason for 1500' separation?
 - Public health and safety
- Comment made about recent SRP event where fire fighters were standing 150 feet away with no issues
- Waiver option?
- When does the existing residential take a effect?
 - Once the zoning entitlement for BESS takes effect it would lock it in regardless of dwelling units that come in after
- Power grid improvements and beneficial impact on tech business
 - Having a restrictive ordinance will be a hinderance to jobs and economic development
 - Need to promote infrastructure development
- Add clarification for utility scale
- Buckeye – 150'. Maricopa county – no additional setback.
- Question about comments previously made and if they need to resubmit them
- Question about 10' separation between containers
 - NFPA is 3'
- Why are we doing a BESS specific district rather than energy in general?
- We need these facilities for the benefit of the grid and the increased demand
- There are economic development/job ramifications if we don't have the power to provide commercial developments
- Ramifications of our 1500' proposal on other community's proposals
- Question about phasing and expansion as it relates to the compliance with the site plan that was presented to the Council
- Why are we being so restrictive to just BESS as opposed to other technologies or energy types?
- Question about the 60 dBA requirement (too low) – recommended 85 dBA
 - Add consideration for ambient noise level
- Question about district and separation and another way around that

Neighborhood Meeting – Sign In Sheet 1/7/26

	Name	Address	Email
1	Maria Gonzalez		
2	Johnny Martin		
3	Caleb Weeks		
4	Jessica Pliny		
5	Jeremy Akim D		
6	Jeff Bellus		
7	Susana Draper		
8			
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Neighborhood Meeting – Sign In Sheet 1/7/26

	Name	Address	Email
1	Arthur Johnson		
2	Andrew Munder		
3	Sarah New		
4	Ed Phillips		
5	Leanne Allard		
6			
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State of Arizona:

County of Maricopa:

Affidavit of Publication

I, Charlene Bisson, Arizona President/CEO
 of Independent Newsmedia Inc. USA, am authorized to make this affidavit of publication.
 Under oath, I state that the following is true and correct.

The **Phoenix Independent** (formerly the Daily Independent) is a newspaper which
 is published Tuesdays and Fridays, is of general circulation and is in compliance with the
 Arizona Revised Statutes 10-140.34 & 39-201 A & B. I solemnly swear that the notice was
 published
 in the regular and entire section of the said newspaper and not in any supplement. The be-
 low listed advertisement appeared in the following issue(s)

Phoenix Independent: 5/15/2026
 Surprise Independent: 5/20/2026

Charlene Bisson

CHARLENE BISSON
President/CEO

Sworn to and subscribed before me this
 5/15/2026

TERRI RODGERS



TERRI RODGERS
Notary Public

Name	CITY OF SURPRISE - Community Development
Order Number	42865
Ordered By	Chris Sexton
Order Date	5/12/2026
Description	FS23-1041
Number Issues	2
Pub Count	2
First Issue	5/15/2026
Last Issue	5/20/2026
Order Price	\$220.94
Publications	Phoenix Independent, Surprise Independent
Publication Dates	Phoenix Independent: 5/15/2026 Surprise Independent: 5/20/2026

cont. CITY OF SURPRISE - Community Development

Order No: 42865

CITY OF SURPRISE PUBLIC NOTICE

Take notice that at the dates, times, and place listed below, the City of Surprise Planning and Zoning Commission & City Council will hold Public Hearings relating to a city-initiated proposed Zone Text Amendment to the Land Development Ordinances (LDO) to establish a new Battery (B) overlay zoning district related to Battery Energy Storage Systems (BESS), establish zoning criteria and development standards, and establish a BESS accessory use category with associated use-specific standards. Case#FS23-1041 Please contact: Chris Sexton; 623-222-3134 or at christina.sexton@surpriseaz.gov for more information regarding this request.

MEETING DETAILS

Planning and Zoning Commission

DATE: Thursday, June 04, 2026
TIME: 6:00 PM
LOCATION: Surprise City Hall
 16000 N. Civic Center Plaza
 Surprise, AZ, 85374

City Council

DATE: Tuesday, June 16, 2026
TIME: 6:00 PM
LOCATION: Surprise City Hall
 16000 N. Civic Center Plaza
 Surprise, AZ, 85374

The City of Surprise streams and broadcasts its City Council meetings. Watch live on Cox channel 11, www.surpriseaz.gov/surprisetv, or the Surprise City Gov Facebook page at www.facebook.com/cityofsurprise. At these meetings, any member of the public may appear and be heard relative to this request or may submit written comments at any time prior to the Public Hearing. To submit email comments, including Call to the Public for non-agenda items for Planning & Zoning Commission meetings, please email pan-dzcomments@surpriseaz.gov prior to the start of the meeting. Individuals wishing to address the City Council on this item, please submit a Public Comment Form online at <https://surpriseaz.gov/480/Council-Meeting-Public-Comment-Form> or in-person with a paper form located at the entrance of the Council Chambers. Please check the agenda for exact start times. Only comments received prior to the start of the meeting will be considered and included in the record. Any interested party may obtain an agenda 24 hours prior to the Public Hearing at the Surprise City Hall. Please note that this item will be placed on the next available agenda should the meeting be canceled or quorum be lost.

Publish: Phoenix Independent, May 15,
 Surprise Independent, May 20, 2026/42865_1

**State of Arizona:
County of Maricopa:
Affidavit of Publication**

I, Charlene Bisson, Arizona President/CEO of Independent Newsmedia Inc. USA, am authorized to make this affidavit of publication. Under oath, I state that the following is true and correct.

The **Phoenix Independent** (formerly the Daily Independent) is a newspaper which is published on Fridays, is of general circulation and is in compliance with the Arizona Revised Statutes 10-140.34 & 39-201 A & B. I solemnly swear that the notice was published in the regular and entire section of the said newspaper and not in any supplement. The below listed advertisement appeared in the following issue(s)

Phoenix Independent: 7/17/2026
Surprise Independent: 7/22/2026

Charlene Bisson

CHARLENE BISSON
President/CEO

Sworn to and subscribed before me this
7/17/2026

Terril Rodgers



TERRI RODGERS
Notary Public

CITY OF SURPRISE PUBLIC NOTICE

Take notice that at the dates, times, and place listed below, the City of Surprise Planning and Zoning Commission & City Council will hold Public Hearings relating to a city-initiated proposed Zone Text Amendment to the Land Development Ordinances (LDO) to establish a new Battery (B) overlay zoning district related to Battery Energy Storage Systems (BESS) and create use-specific development standards. Case#FS23-1041

Please contact: Chris Sexton; 623-222-3134 or at christina.sexton@surpriseaz.gov for more information regarding this request.

MEETING DETAILS	
<u>Planning and Zoning Commission</u>	<u>City Council</u>
DATE: <i>Thursday, August 06, 2026</i>	DATE: <i>Tuesday, September 01, 2026</i>
TIME: 6:00 PM	TIME: 6:00 PM
LOCATION: Surprise City Hall 16000 N. Civic Center Plaza Surprise, AZ, 85374	LOCATION: Surprise City Hall 16000 N. Civic Center Plaza Surprise, AZ, 85374

The City of Surprise streams and broadcasts its City Council meetings. Watch live on Cox channel 11, www.surpriseaz.gov/surprisetyv, or the Surprise City Gov Facebook page at www.facebook.com/cityofsurprise. At these meetings, any member of the public may appear and be heard relative to this request or may submit written comments at any time prior to the Public Hearing. To submit email comments, including Call to the Public for non-agenda items for Planning & Zoning Commission meetings, please email pandzcomments@surpriseaz.gov prior to the start of the meeting. Individuals wishing to address the City Council on this item, please submit a Public Comment Form online at <https://surpriseaz.gov/480/Council-Meeting-Public-Comment-Form> or in-person with a paper form located at the entrance of the Council Chambers. Please check the agenda for exact start times. Only comments received prior to the start of the meeting will be considered and included in the record. Any interested party may obtain an agenda 24 hours prior to the Public Hearing at the Surprise City Hall. Please note that this item will be placed on the next available agenda should the meeting be canceled or quorum be lost.

Publish: Phoenix Independent, July 17, Surprise Independent, July 22, 2026/45818_1

Name	CITY OF SURPRISE - Community Development
Order Number	45818
Ordered By	Chris Sexton
Order Date	7/10/2026
Description	FS23-1041
Number Issues	2
Pub Count	2
Order Cost	\$208.88
First Issue	7/17/2026
Last Issue	7/22/2026
Publications	Phoenix Independent, Surprise Independent

Christina Sexton

From: Jeffrey Blilie [REDACTED]
Sent: Wednesday, February 12, 2025 9:52 AM
To: Christina Sexton
Subject: RE: ZTA - BESS and Hazardous Materials
Attachments: FS23-1041 Zone Text Amendment Hazardous Materials Update -- jmb redlines 020425(1544896.1).docx

*****The e-mail below is from an external source. Please do not open attachments or click links from an unknown or suspicious origin.*****

Christina,

Attached are my redlines to the draft LDO text amendment. After reviewing the entire text amendment more thoroughly I think it is very important to bifurcate BESS from Hazardous Materials production, manufacturing and storage. I also think there was a confusing amount of overlap in the definitions and uses.

In the attached I basically went with your Option #2 for the BESS use and Options #1 for Hazardous Materials production, manufacturing and storage use. I also cleaned up the definitions and use tables. Lastly, I added a definition for Battery Storage (minor) made it an accessory use across the board.



Jeffrey M. Blilie
Partner

GILBERT BLILIE PLLC



This message may contain confidential and privileged information. If it has been sent to you in error, please reply to advise the sender of the error and then immediately delete this message.

From: Christina Sexton <Christina.Sexton@surpriseaz.gov>
Sent: Monday, February 3, 2025 4:07 PM
To: Jeffrey Blilie [REDACTED]; George Pasqual [REDACTED]; [REDACTED] David Conwell [REDACTED] James Jackson [REDACTED] Autumn [REDACTED] Andrew Yancey [REDACTED] Perry, Jessica [REDACTED]
Subject: ZTA - BESS and Hazardous Materials

Good afternoon all,

Thank you for attending the outreach meeting last Thursday night.

Table No. 106-1c - Primary Land Use Matrix for All Zoning Districts																										
"P" = Permitted; "AUP" = Administrative Use Permit; "CUP" = Council Use Permit; "(blank space)" = Prohibited																										
	Residential				Surprise Heritage District		Traditional Neighborhood Development				Mixed Use			Commercial				Employment				Open Space/Public Uses			Use Specific Standards	
Zoning Districts Uses	RR	R-1	R-2	R-3	SHD-RO	SHD-CO	TND-R	TND-C	TND-MU	TND-OS	MU-1	MU-2	MU-3	CO	C-1	C-2	C-3	BP	I-1	I-2	I-3	OS-1	OS-2	PF	Specific regulations can be found in Sections listed below	
Residential																										
Assisted Living Center (more than 10 residents)			P	P	AUP	P	AUP		P			P														Sec. 106-10.9
Assisted Living Home (10 or less residents)	P	P	P		P		P					CUP				CUP	CUP	CUP	CUP							Sec. 106-4
Dormitory									P		P	P	P													
Dwelling, Live/Work				P	CUP	P	P		P		P	P	P													
Dwelling, Multi-family (4 or more)					P		P																			
Dwelling, Single-family	P	P	P		P		P																			
Dwelling, Two-family (Duplex)			P	P	AUP		P						P													Sec. 106-10.21
Dwelling, Three-family (triplex)			P	P	AUP		P						P													Sec. 106-10.26
Group Home	P	P	P	P	P		P																			Sec. 106-10.29
Manufactured Homes	P				P								P													
Model Home Complex	P	P	P				P						P													
Commercial																										
Airport or Private Airstrip	CUP												CUP				CUP	CUP	CUP							Sec. 106-10.6
Amusement and/or Theme Park																	CUP	CUP	CUP							Sec. 106-10.7
Animal Boarding Facility						P										P	P		P							Sec. 106-10.8
Animal Clinic	CUP					P		P			P			P	P	P	P		P							Sec. 106-10.8
Animal Grooming						P										P	P		P							Sec. 106-10.8
Animal Hospital																CUP	CUP		CUP						P	Sec. 106-10.8
Animal Shelter	CUP					P		P	P		P	P	P		P	P	P	P	P							
Athletic or Fitness Club (Commercial)						P		P	P		P	P		P	P	P	P	P								Sec. 106-10.10
Bank						CUP		CUP	CUP		CUP	CUP	CUP		CUP	CUP	CUP			P	P				P	
Bar/Nightclub																										
Bus Terminal													CUP							P	P					
Campground						P		P	P					P	P	P	P			P	P					Sec. 106-10.12
Catering Services																	CUP	CUP								Sec. 106-10.12
Cemetery and Mausoleum	CUP	CUP	CUP	CUP													CUP	CUP		CUP						
Cemetery, Pet (Limited to small animals)																							P	P		
Community Facility	P	P	P	P	AUP	P	P	P	P	P	P	P	P										P	P		Sec. 106-10.13
Community Garden	P	P	P		P	P	P		P	P	P	P		P	P	P	P	P								Sec. 106-10.15
Daycare Center (Child or Adult)		CUP	CUP	CUP	AUP	P	AUP	P	P		P	P	P		P	P	P	P	P	P						
Entertainment Establishment - Indoor						P		P	P				P				P		P							
Entertainment Establishment - Outdoor													CUP				CUP		CUP						CUP	
Fairground/Stadium	CUP																CUP	CUP								
Funeral Home, Mortuary						CUP											CUP	CUP								
Galleries, Museums (including display & production space)						P		P	P		P	P	P		P	P	P						P			PEDS
Golf Course (public or private)						P		P	P			P	P				P	P						P	P	
Hotels, Motels, Resort, Timeshares																	P	P	P							
Library	P	P	P	P	P	P	P											P	P							Sec. 106-10.25
Medical Hospital, Overnight Surgical Facility																	CUP	CUP		CUP						Sec. 106-10.27
Medical Marijuana Dispensary																	CUP	CUP		CUP	CUP					
Medical Marijuana Offsite Cultivation Facility						P		P	P		P	P	P	P	P	P	P	P	P							
Medical Office (Health Care Facility)						CUP		P	CUP			CUP	CUP		P	P	P									
Microbrewery, Distillery, Winery			P	P	CUP	P	P					P					P	P							P	
Nursing Care Facility						P		P	P		P	P		P	P	P	P	P	P	P	P					
Office, General																										

Page 114

Table No. 106-1c - Primary Land Use Matrix for All Zoning Districts																											
“P” = Permitted; “AUP” = Administrative Use Permit; “CUP” = Council Use Permit; “(blank space)” = Prohibited																											
Zoning Districts Uses	Residential				Surprise Heritage District		Traditional Neighborhood Development				Mixed Use			Commercial				Employment				Open Space/Public Uses			Use Specific Standards		
	RR	R-1	R-2	R-3	SHD-RO	SHD-CO	TND-R	TND-C	TND-MU	TND-OS	MU-1	MU-2	MU-3	CO	C-1	C-2	C-3	BP	I-1	I-2	I-3	OS-1	OS-2	PF	Specific regulations can be found in Sections listed below		
Park, Recreation, and Open Space	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
Park and Ride						AUP	AUP	AUP	AUP		P	P							P	P			P	P	P		
Parking Lot, Parking Structure					CUP	P	AUP	AUP	AUP		CUP	CUP	CUP			CUP	CUP		CUP	CUP					P		
Personal Service Establishment					AUP	P	AUP	P	P		P	P	P	P	P	P	P	P									
Places of Assembly					CUP	P		P	P		P	P	P		P	P	P	P	P						P		
Places of Worship	P	P	P	P	P	P	P	P	P		P	P	P		P	P	P										
Plant Nursery					AUP	P		P								P	P		P						P	Sec. 106-10.30	
Post Office					P	P		P	P						P	P	P	P	P						P		
Private Club						P		P	P		P	P			P	P	P	P	P						P		
Public Facility	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
Racetrack													CUP						CUP	CUP						Sec. 106-10.36	
Recreational Vehicle (RV) Park	CUP												CUP				CUP									Sec. 106-10.37	
Recreational Vehicle (RV) Storage																	CUP		P	P							
Repair Service Establishment					AUP	P	AUP	P	P		P	P	P	P	P	P	P	P	P	P							
Restaurant					AUP	P		P	P		P	P	P		P	P	P		P	P							
Restaurant, Convenience/Take Out						P	AUP	P	P		P	P	P	P	P	P	P	P	P						P		
Retail Shopping Establishment					AUP	P	AUP	P	P		P	P	P	P	P	P	P	P	P								
Schools: Pre-K through 12 (Private)		CUP	CUP	CUP			CUP				CUP	CUP			CUP	CUP										Sec. 106-10.39	
Schools: Universities or Colleges (Public or Private)						CUP						CUP			CUP	CUP	CUP	P	CUP					P		Sec. 106-10.39	
Schools: Vocational (Technical or Trade)						CUP										CUP	CUP	P	CUP	CUP						Sec. 106-10.39	
Self-Storage Facility						CUP										CUP	CUP	CUP	CUP	CUP						Sec. 106-10.40	
Service Call Establishment					AUP	P	AUP	P	P		P	P	P	P	P	P	P	P	P	P							
Sexually Oriented Business																				CUP	CUP					Sec. 106-10.41	
Shooting Range-Indoor Only																	P		P	P							
Showroom/Sales Office						P		P	P		P	P	P	P	P	P	P	P	P								
State and County Vehicle Inspection Station						P										P	P		P	P					P		
Tattoo and Body Piercing																CUP	P									Sec. 106-10.45	
Technology/Business Incubator Space						P												P	P								
Utility Equipment Infrastructure	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P		P	P			
Utility Service Yard	CUP																	P							P		
Vehicle Fueling Station						P									P	P	P	P	P	P	P					Sec. 106-10.47	
Vehicle Rental Facilities																P	P		P	P						Sec. 106-10.48	
Vehicle Sales & Leasing: New or Used (Commercial, including Equipment)																			P	P						Sec. 106-10.49	
Vehicle Sales & Leasing: New or Used (OHV, motorcycles, boats, or similar)																	CUP	P	P	P						Sec. 106-10.49	
Vehicle Sales & Leasing: New or Used (Personal)																	CUP		P	P						Sec. 106-10.49	
Vehicle Service: Major Repair																	CUP		P	P						Sec. 106-10.50	
Vehicle Service: Minor Repair						CUP										CUP	CUP	P	P	P						Sec. 106-10.50	
Vehicle Washing Facilities																P	P		P							Sec. 106-10.51	
Wireless Telecommunication Facilities	P	P	P	P	P	P	P	P	P		P	P		P	P	P		P	P	P	P				P	Chapter 107	
Zoo & Exotic Animal Keeping	CUP																		CUP				CUP	CUP		Sec. 106-10.52	
Employment/Industrial																											
Agricultural Operations	P																									Sec. 106-10.5	
Auction—Vehicle (passenger, commercial) & heavy equipment																			P	P							
Batch Plant, Paving Material Mixing Plant																					CUP						
Onsite Battery Storage & Manufacturing Facility	CUP																		CUP	CUP	CUP					Sec. 106-10.22	
Brick, Clay, Concrete, or Similar Product—Manufacturing																				P	P						

Table No. 106-1c - Primary Land Use Matrix for All Zoning Districts																										
"P" = Permitted; "AUP" = Administrative Use Permit; "CUP" = Council Use Permit; "(blank space)" = Prohibited																										
Zoning Districts Uses	Residential				Surprise Heritage District		Traditional Neighborhood Development				Mixed Use			Commercial				Employment				Open Space/Public Uses			Use Specific Standards	
	RR	R-1	R-2	R-3	SHD-RO	SHD-CO	TND-R	TND-C	TND-MU	TND-OS	MU-1	MU-2	MU-3	CO	C-1	C-2	C-3	BP	I-1	I-2	I-3	OS-1	OS-2	PF	Specific regulations can be found in Sections listed below	
Contractor Yard																			P	P		CUP			CUP	
Correctional Institutions/Facilities																		P	P							
Data Center																			CUP	CUP	CUP					Sec. 106-10.22
Energy Production & Storage Utility Scale Battery Energy Storage System Facilities (BESS or Similar Uses)	CUP												P			P	P									Sec. 106-10.18
Equestrian Center, Commercial Stables	CUP																			P						
Farm and Heavy Equipment Rental, Sales, Service or Storage	CUP														P	P	P		P							
Feed and Tack Sales	CUP																		P	P						
Fleet-Based Services																		CUP	P	P						
Food Manufacturing & Processing						CUP												CUP	CUP	P						
Freight Depot/Distribution Center																			P	P						
Grain Processing; including Milling, Drying, Storage	CUP																		P	P						
Laundry, Dry Cleaning; Bulk Operation (Pick-Up & Delivery)																		P	P	P						
Machine Shop, Welding Shop																		P	P	P						
Manufacturing and Fabrication																				CUP	CUP					Sec. 106-10.5422
Hazardous Materials Manufacturing, Storage or Production (acids, petroleum or Styrofoam materials)																	CUP		P	P						
Manufactured Home, Portable Building, Oversized and Recreational (RV) Vehicle Sales and Service																					CUP					Sec. 106.10.28
Mining and Mineral Extraction																			P	P					P	
Plant Nursery (Growing Facility & Wholesale)	CUP																	P	P	P						
Printing Plant (commercial scale)																			P	P	P				P	Sec. 106-10.38
Recycling, Collection Facility																				P	P				P	Sec. 106-10.38
Recycling, Processing Facility																		P	P	P						
Research Facility — Laboratory and Testing																					P					
Sand and Gravel Operation																					CUP					
Sanitary Landfill, Solid Waste Facility																			CUP	CUP	CUP					
Solar Facility	CUP																			P	P					
Stone Product Curing, Fabrication																			P	P						
Taxidermist																				P						
Tile, Roofing & Waterproofing Production																			P	P						Sec. 106-10.46
Truck Stop (full service & repair permitted)																				P						
Vehicle Towing & Impound Lot																			P	P						
Warehouse/Distribution																				P	P	CUP	CUP	P		
Water Aquafer Recharge/Storage Facility	CUP																			P	P			P		
Water Reclamation or Wastewater Facility																	P	P	P							
Wholesale Shopping Establishment																										

Table No. 106-1d - Accessory Land Use Matrix for All Zoning Districts																											
"P" = Permitted; "AUP" = Administrative Use Permit; "CUP" = Council Use Permit; "(blank space)" = Prohibited																											
	Residential				Surprise Heritage District		Traditional Neighborhood Development				Mixed Use				Commercial					Employment				Open Space/Public Uses			Use Specific Standards
Zoning Districts Uses	RR	R-1	R-2	R-3	SHD-RO	SHD-CO	TND-R	TND-C	TND-MU	TND-OS	MU-1	MU-2	MU-3	CO	C-1	C-2	C-3	BP	I-1	I-2	I-3	OS-1	OS-2	PF	Specific regulations can be found in Sections listed below		
Accessory Uses/Structures/Buildings																											
Accessory Dwelling Unit (ADU)	P	P	P		P		P																		Sec. 106-10.2		
Accessory Uses and Structure	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Sec. 106-10.3		
Onsite Battery Storage Facility & Manufacturing																		CUP	CUP						Sec. 106-10.22		
Utility-Scale Battery Energy Storage System	CUP																		CUP	CUP	CUP				Sec. 106-10.22		
Bed and Breakfast Establishments	AUP	AUP	AUP		AUP	P	AUP																		Sec. 106-10.11		
Common Area Open Space	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
Community Facility	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P			
Community Garden	P	P	P	P	P	P	P	P	P	P	P	P	P										P	P	Sec. 106-10.13		
Drive-Through Facilities						CUP										CUP	CUP		CUP						Sec. 106-10.17		
Farm Stand	P																										
Heliport, Helipad	CUP																CUP	CUP	CUP						Sec. 106-10.22		
Home Occupation	P	P	P	P	P	P	P		P		P	P	P												Sec. 106-10.23		
Outdoor Dining Area						P		P	P		P	P		P	P	P	P	P							Sec. 106-10.30		
Outdoor Display, Sales Area																	P		P	P					Sec. 106-10.31		
Outdoor Play for Animal Boarding Facility						CUP										CUP	P		P						Sec. 106-10.8		
Outdoor Storage and Use Area																	CUP		P	P					Sec. 106-10.32		
Portable Carports	P	P	P	P																					Sec. 106-10.35		
Ranch	P																										
Recycling, Reverse Vending Machines																P	P							P	Sec. 106-10.38		
Sport Courts	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Sec. 106-10.43		
Swimming Pool	P	P	P	P	P	P	P	P	P	P	P	P	P			P	P						P	P	Sec. 106-10.44		
Cottage Industry																											
Galleries, Studio (including display & production space)					AUP		AUP																		Sec. 106-10.14		
Office					AUP		AUP																		Sec. 106-10.14		
Personal Service Establishment					AUP		AUP																		Sec. 106-10.14		
Restaurant					AUP		AUP																		Sec. 106-10.14		
Retail Shopping Establishment					AUP		AUP																		Sec. 106-10.14		
Service Call Establishment					AUP		AUP																		Sec. 106-10.14		
Welding Shop in association with art gallery					AUP		AUP																		Sec. 106-10.14		
Temporary Uses																											
Construction trailers	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Sec. 106-10.35		
Donation Bins	P	P	P	P	P	P		P						P	P	P	P	P	P					P	Sec. 106-10.16		
Mobile Vending	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Chapter 26		
Portable Storage Containers	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Sec. 106-10.35		
Seasonal Sales	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Sec. 106-10.42		
Special Events	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	Sec. 106-10.42		

Hazardous Materials - Supplemental development standards.

Sec. 101-2.2. - Glossary of terms.

Battery Energy Storage System (BESS) — A physical container equipped with cooling, ventilation, fire suppression, and battery management systems which provides secondary containment to battery cells charging and storing energy from the electrical grid or a Solar Facility. A “Utility-Scale BESS” is defined as a BESS container with a capacity to store at least 20 MW of electrical energy and which interconnects to the public electrical grid or Solar Facility. ~~Electrochemical devices that charge, or collect, energy from the grid or a generation facility, store that energy, and then discharge that energy at a later time to provide electricity or other grid services.~~

Onsite Battery Storage Facility and Manufacturing – A rechargeable energy storage system consisting of electrochemical storage batteries, battery chargers, controls and associated electrical equipment designed to provide electrical power to a building. The system is typically used to provide standby or emergency power, an uninterruptable power supply, load shedding, load sharing or similar capabilities to a building or buildings located on the same property or project site.

Energy Production and Storage Facilities - ~~Any technology process that is capable of~~ absorbing electricity, storing the electricity for a period of time, and redelivering the electricity, expressly including but not limited to Battery Energy Storage System Facilities and Onsite Battery Storage Facilities.

Battery Energy Storage System (BESS) Facilityies – A collection of BESS containers~~devices~~ that store and supply electrical energy from the electrical grid or a Solar Facility and discharge that energy at a later time, along with its component parts including associated containers, ventilation, and fire safety equipment.

Hazardous Material – Any material that because of its quantity, concentration, physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or environment. “Hazardous materials” include but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment, but shall expressly not include Battery Energy Storage Systems.”

Solar Facility – A commercial facility that converts sunlight into electricity using Photovoltaics or other conversion technology, along with all necessary equipment for generating electricity, which may include charge regulators, inverters, associated fencing, landscaping, parking lots, and Photovoltaic support structures and buildings. A Solar Facility may also include electrical substations or transformers, transmission lines, and Battery Energy Storage System Facilities as an accessory use.

Chapter 106 - ZONING AND USE STANDARDS

ARTICLE X. - USE SPECIFIC STANDARDS

Sec. 106-10.22. – Onsite Battery Storage Facility and Manufacturing, Battery Energy Storage System Facility, Energy Production & Storage Facility, and Manufacturing, Storage or Production (acids, petroleum, or Styrofoam materials)

- A. Shall be located no closer than 500 feet from another Energy Storage use hazardous material use, measured from property linethe Energy Storage use to adjacent Energy Storage useproperty line(s). This separation requirement shall not apply to BESS containers functioning together as part of one Battery Energy Storage System Facility.
- B. Shall be located no closer than 150 one thousand five hundred (1,500) feet to an existing residential dwelling unit, measured in a straight line in any direction from lot line to lot linethe BESS Facility or Onsite Battery Storage Facility to the nearest wall of an existing dwelling unit, unless otherwise determined by the Community Development Director.
 - (I) BESS Facilities must be internally set back a minimum of 100 feet from the subject property line, unless otherwise determined by the Community Development Director.
- ~~B.C.~~ _____ Shall have prepared and approved by the City of Surprise Fire Department, a Hazard Mitigation Plan prior to review by Planning and Zoning Commission.
- ~~C.D.~~ _____ Shall have prepared a noise study that depicts the impact to surrounding properties and provides mitigation ~~criteria to ensure the noise levels do not exceed an exterior noise level of 60 dBA beyond the~~ property lines.
- ~~D.E.~~ _____ Shall have prepared and approved by the City of Surprise Fire Department, a Commissioning Plan in accordance with NFPA 855.

~~E.F.~~ Shall have prepared and approved by the City of Surprise Fire Department, a Decommissioning Plan in accordance with NFPA 855.

~~F.G.~~ Battery Energy production and Sstorage System F facilities shall:

- ~~(I)~~ Incorporate an 8 foot to 12 foot high perimeter wall to prevent unauthorized access to the facility and screen the Battery energy storage systems. Wall(s) shall be designed to include changes in the surface plane of the wall, variable heights, articulated recesses and wall offsets to avoid the construction of long, unbroken and monotonous expanses of wall(s). Be screened from adjacent uses using fencing and landscaping as appropriate.
- ~~(II)~~ Minimize grading to maintain natural landform.
- ~~(III)~~ Maintain a 25-foot landscape setback along the outside perimeter of the project site, no landscaping shall be located inside the perimeter wall.
- ~~(IV)~~ Landscaping within the front yard, or any street side/rear yard area shall be densely landscaped in accordance with the city's Land Development Ordinance with all trees having a minimum size of 24" box.
- ~~(V)~~ Storage Utilize Battery Energy Storage Systems technologies facilities shall bewhich are self-contained and shall not contain any internal access for human occupancy.
- ~~(VI)~~ (IV) Shall have a report detailing 24/7 security surveillance and notification systems.

- Sec. **106-10.23.** – Heliport.
- Sec. **106-10.24.** – Home Occupation.
- Sec. **106-10.25.** – Live-work dwelling.
- Sec. **106-10.26.** – Medical hospitals.
- Sec. **106-10.27.** – Manufactured homes.
- Sec. **106-10.28.** – Marijuana facility uses.
- Sec. **106-10.29.** – Mining and mineral extraction.
- Sec. **106-10.30.** – Model home complex.
- Sec. **106-10.31.** – Outdoor dining/seating.
- Sec. **106-10.32.** – Outdoor display and sales area.
- Sec. **106-10.33.** – Outdoor storage and use.
- Sec. **106-10.34.** – Plant nursery.
- Sec. **106-10.35.** – Portable carports.
- Sec. **106-10.36.** – Portable storage containers and construction trailers.
- Sec. **106-10.37.** – Racetrack.
- Sec. **106-10.38.** – Recreational vehicle (RV) park.
- Sec. **106-10.39.** – Recycling operations and facilities.
- Sec. **106-10.40.** – Schools and universities.
- Sec. **106-10.41.** – Self-storage facilities.
- Sec. **106-10.42.** – Sexually oriented businesses (SOB).
- Sec. **106-10.43.** – Smoking lounges.
- Sec. **106-10.44.** – Special events and seasonal activities.
- Sec. **106-10.45.** – Sports courts.
- Sec. **106-10.46.** – Swimming pools.
- Sec. **106-10.47.** – Tattoo and/or body piercing establishments.
- Sec. **106-10.48.** – Truck stop/travel plaza.
- Sec. **106-10.49.** – Vehicle fueling stations.
- Sec. **106-10.50.** – Vehicle retail sales.
- Sec. **106-10.51.** – Vehicle service.
- Sec. **106-10.52.** – Vehicle washing facilities (also known as car washes).
- Sec. **106-10.53.** – Zoos, indigenous wildlife rescue facilities.

Sec. 10-10.54. – Hazardous Material Manufacturing, Storage, or Production (acids, petroleum, or Styrofoam materials)

A. Shall be located no closer than 500 feet to another Hazardous Material or Energy Storage use, measured from property line to adjacent property line(s).

B. Shall be located no closer than one thousand five hundred (1,500) feet to an existing residential unit, measured in a straight line in any direction from lot line to lot line.

C. Shall have prepared and approved by the City of Surprise Fire Department, a Hazard Mitigation Plan prior to review by Planning and Zoning Commission

~~A-D.~~ Shall have prepared a noise study that depicts the impact to surrounding properties and provides mitigation criteria to ensure the noise levels do not exceed an exterior noise level of 60 dBA beyond the property lines.

E. Shall have prepared and approved by the City of Surprise Fire Department, a Commissioning Plan in accordance with NFPA 855.

~~B-F.~~ Shall have prepared and approved by the City of Surprise Fire Department, a Decommissioning Plan in accordance with NFPA 855.

~~C-G.~~ Shall incorporate an 8-foot to 12-foot-high perimeter wall to prevent unauthorized access to the facility and screen the Hazardous Materials use. Wall(s) shall be designed to include changes in the surface plane of the wall, variable heights, articulated recesses and wall offsets to avoid the construction of long, unbroken and monotonous expanses of walls.

February 14, 2025

SENT VIA ELECTRONIC MAIL

Mr. Lloyd Abrams
Community Development Director, City of Surprise
Surprise City Hall
16000 N. Civic Center Plaza
Surprise, Arizona 85374

**Re: Surprise Battery Energy Storage Systems Revisions to Pending Text
Amendment FS23-1041**

Dear Mr. Abrams,

We represent Copia Power in the ongoing review and collaboration process with the City of Surprise on a zoning code amendment to conditionally permit utility-scale battery energy storage systems (“BESS”), onsite battery storage facilities, and related energy technologies in Surprise. We greatly appreciate our interaction with you and your staff throughout this process as we have been able to meet with you and provide multiple rounds of written comments as well as documents containing generally accepted safety standards and planning guidance for BESS. We also appreciate the opportunity to weigh in on the language and standards proposed in two current revised drafts, Options 1 and 2, dated February 3, 2025. Through this correspondence, we hope to provide additional perspectives for your consideration as the amendment drafts continue to develop, and draw attention to possibly unintended consequences resulting from the current draft’s language.

Benefits of BESS. As a preliminary matter, it is important to account for the economic benefits of BESS projects to cities and counties across the state of Arizona. BESS projects offer several means of strengthening the local economy and bolstering regional prosperity by:

- ***Increasing Tax Revenue and Furthering Economic Growth*** – BESS projects are often built on land with minimal other development potential. The resulting tax code transition from vacant land to industrial classification offers municipalities a significant increase in the leviable real property tax rate. Furthermore, the BESS equipment on the land is subject to personal property tax capable of generating millions of dollars in tax revenue over the life of the project, flowing to Maricopa County as well as local school districts, fire departments, and general municipal budgets. BESS projects can also attract hundreds of high-quality local construction jobs and a handful of full-time O&M positions.
- ***Furthering Grid Reliability*** – With the emergence of renewable energy supplies onto the wholesale energy market, BESS has become a critical tool for integrating intermittently generated resources such as wind and solar into utilities’ energy portfolios. BESS can also help to quickly dispatch energy during peak demand periods, such as a hot summer’s afternoon in central Arizona. These projects are essential to ensuring overall grid reliability, preventing blackouts, and maintaining critical services, particularly as our utilities forecast significant increases in the State’s energy needs to fuel economic

development: SRP anticipates a need to double its energy output in the next 10 years, and APS expects needing a 50% increase in electricity production over the next 7 years. Providing avenues for establishment of BESS projects in the proper locations within Surprise will assist utilities in meeting this remarkable increase in energy demand in Surprise and throughout central Arizona.

Review of Amendment Proposal. To capitalize on these local benefits and assist in meeting the state's growing energy needs, we encourage a more balanced approach that allows for development of viable BESS sites within the Surprise city limits while also prioritizing community safety consistent with nationally recognized standards. While we believe both of the drafts most recently circulated by staff include features that unduly limit the types of BESS projects the Planning and Zoning Commission could consider and approve, we prefer staff's Option 2 over Option 1 because Option 2 requires separation only from existing residences and not undeveloped residentially-zoned property. Any nearby property that develops subsequent to a BESS site would have the ability to plan their own development to account for the BESS existing at that time.

While we appreciate the City's efforts throughout the drafting process thus far and believe significant progress has been made toward a workable regulatory framework, it is our opinion that the current text amendment drafts would have a detrimental and preclusive effect on the development of BESS projects in Surprise. Instead of stringent upfront regulation, we propose standards based on the industry guidance. If the City feels any specific application requires additional mitigation, the City and applicant will have the ability to work through such considerations as part of the required CUP process. The CUP process in Surprise under Land Development Ordinance Section 102-6.3 already provides extensive criteria to be satisfied, including compatibility with the surrounding area and that the use shall not be detrimental to the public health, safety, or general welfare. As such, any safety or compatibility issues for a specific BESS project will necessarily be addressed within the CUP application.

We recommend four (4) revisions to the current approach that will expand development opportunities without, in our view, compromising resident safety:

- Recommendation #1: Distinguish the regulations applicable to BESS from those applicable to Hazardous Materials and Battery Manufacturing. Particularly with respect to the separation requirements currently proposed, we recommend distinguishing the standards applicable to the 'Onsite Battery Storage Facility,' 'Hazardous Material' and 'Battery Energy Storage System Facilities' uses. These uses significantly differ in scale, chemical composition, containment, and application, each warranting its own individualized and tailored land use regulations.
- Recommendation #2: Measure residential separations from the BESS equipment instead of the BESS property boundary. The current draft language regarding residential separations measures from property line to property line and does not account for the location of the BESS equipment within the property. BESS facilities typically occupy a much smaller land footprint within their host property, locating the source of potential impact interior to the site. Rather than measuring the required separations from property

line to property line, we recommend adopting a “use to use” approach that measures the required separation distance from the source of potential impact to the adjacent buffered use (i.e., sensitive receptor).

- **Recommendation #3: Implement separation requirements and setbacks informed by NFPA regulation as baseline standards for the CUP process.** Drawing upon National Fire Protection Association (“NFPA”) guidelines and American Planning Association (“APA”) recommendations as a regulatory “floor” of standard safety protections, we recommend a minimum 100’ internal setback for BESS facilities within the property and a minimum 150’ setback from BESS facilities to existing residences. NFPA Regulation 855 is the gold standard for BESS safety and is worked into staff’s existing draft in several respects. We encourage the City to also follow NFPA 855’s 100’ setback requirement for a remote BESS facility. Also, through the CUP process, staff may recommend, and the Planning & Zoning Commission may approve, supplemental development standards, such as increased separation requirements, additional screening measures, and other stipulations designed to mitigate specific conditions presented by a specific application in a specific location. More information for each project will be available once an application is filed, and there is no need to arbitrarily constrain the City’s ability to consider projects by setting up-front criteria far more stringent than nationally accepted safety regulations. The current draft’s approach would prematurely prevent the Commission from reviewing and considering BESS applications that it might find meet the CUP criteria for a specific site.
- **Recommendation #4: Required screening for each BESS facility may be determined through the CUP process.** Instead of the specific perimeter wall and landscaping requirements in the current draft, we recommend that screening measures are considered through the CUP process based on surrounding land uses, topographic conditions, and community character. While BESS facilities located in developed or more densely-populated areas of Surprise may require specific screening techniques, screening may be unnecessary in other areas, and certain screening methods can have negative impacts on water usage and wildlife movement. As such, it is more appropriate to consider screening once more information is available about a specific proposal.

Thank you for your time and consideration of these comments and recommendations. We value the ability to engage in this amendment process in the hopes of formulating an appropriate and tailored BESS text amendment that balances public safety with BESS’s local economic benefits and the need to contribute to overall grid reliability.

Sincerely,



Andrew D. Yancey, Esq.

Enclosures

Text Amendment Mark Up and Comments



February 13, 2025

City of Surprise
Community Development
16000 N. Civic Center Plaza
Surprise, AZ 85374

Re: City of Surprise Battery Energy Storage System (BESS) Ordinance (Chapter 106, Article X, Sec. 106-10.22)

RMH Project No. 21144

Dear Community Development Staff:

We are an engineering firm currently working on a development project within the city limits and have been made aware of recently proposed changes to the City's Ordinances. Specifically, the newly proposed change to Chapter 106, Article X, Sec. 106-10.22 of the Municipal Code.

We understand that if adopted, this ordinance will require a 1500' separation from any residential property line to the property line of any project containing Battery Energy Storage Systems (BESS) for primary use.

Furthermore, we are sensitive to the damage and injuries sustained by the City of Surprise own staff, and the impact to their community caused by the McMicken BESS event in 2019. We support any measures that make our communities safer and always lean to the side of caution to protect life and property. We believe communities and local governments have learned greatly from such events.

The purpose of this letter is to respectfully request reconsideration of the setbacks required on the new ordinance and/or a waiver from said ordinance. The following table shows a summary of the fire protection measures identified for the BESS system used in the McMicken project and the new measures being proposed for our project. We are offering this information for your consideration and to request two options for the setback limits:

1. Option 1 – The setback be reduced to 750' between property lines.
2. Option 2 – The setback be reduced to 1000' measured from the actual residence to the BESS and not from property lines.

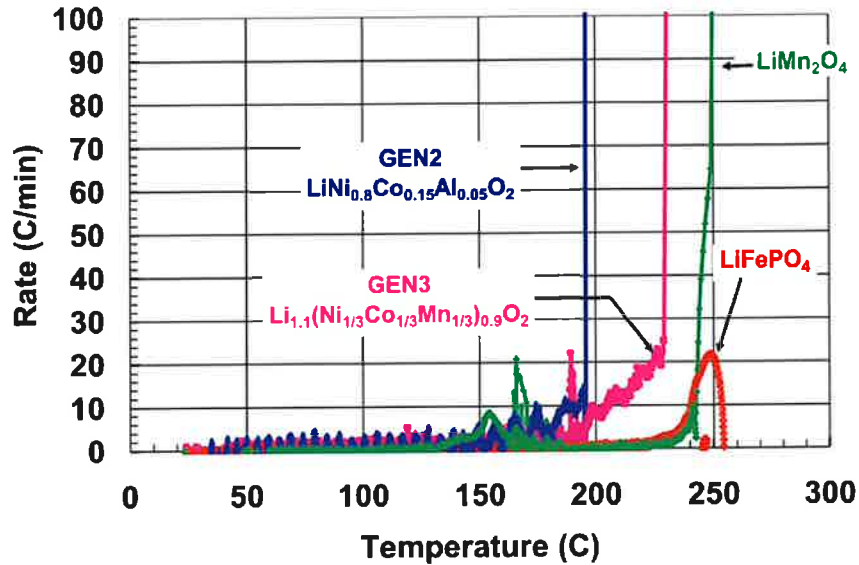
We are proposing the use of UL9540A listed HiTHIUM BESS system as an auxiliary use to back up data center buildings within the property located at the intersection of Lichfield Road and Cactus Road. In addition to providing the fire protection measures listed below, we plan on keeping the BESS systems between our buildings and install physical barriers to prevent unauthorized access and screening of the equipment. Berms

around the property line are being included in the design to further assist with access control. A fire truck access lane is provided along the BESS units.

The BESS will be monitored by a SCADA system and trained operations personnel will be available 24x7 onsite to monitor the SCADA system. It will include a fire alarm system in compliance with State and local AHJ requirements to alert personnel and the fire department at the local fire station 308, which happens to be across Cactus Road in front of the property. Reporting (such as an Emergency Response Plan), as required by the local AHJ, will also be provided.

FIRE PROTECTION SYSTEMS COMPARISON	
McMicken BESS	HiTHIUM Fire Protection System
Lithium batteries of Nickel Manganese Cobalt Oxide (NMC) composition. Nickle has high specific energy, but it is not stable, Manganese is combined to Nickle to stabilize the battery chemistry.	Lithium batteries of Iron Phosphate LiFePO_4 (LFP) composition. These battery chemistry has good thermal stability and is the preferred battery for applications requiring large amount of power.
VESDA smoke detection system	Smoke detectors, heat sensors, and gas sensors
Clean agent fire suppression system Novec 1230	Clean agent and water sprinkler system for fire suppression
No exhaust ventilation	Ventilation system with gas detector, fan controller, and exhaust fan
Cooling via air conditioning window units	Batteries are closed loop water cooled (no water consumption during operation), improving thermal stability
Monitoring at the module level	Dedicated cell monitoring and protection systems
Center aisle between two racks of batteries	No internal aisles, batteries are accessible from the outside by opening exterior doors
Standard shipping container	3-layer structure of double steel and fireproof wool with 1hr fire resistance rating. Interior and exterior material are fire retardant per UL94-V0.
N/A	Gas concentration reduction system, with 2hrs of standby power per NFPA 855-2023 Sec 9.6.5.6.7
N/A	Gas detection system with 24hrs of standby power and 2hrs of alarm per NFPA 855-2023 Sec 4.8.3

The National Renewable Energy Laboratory published a document ([Technical Report: Vehicle Battery Safety Roadmap Guidance](#)) that compares different battery chemistries and their self-heating thermal ramp. Their lab results show LiFePO_4 batteries have the greatest reduction in self-heating rate and increased onset temperature for runaway than other battery chemistries. See lab results in the graph on next page.



Onset of self-heating in thermal ramp experiment on Li-ion cells.
LiFePO₄ olivine cathodes show the greatest reduction in self-heating rate and increased onset temperature for runaway.

We appreciate your consideration and prompt attention to this request and will welcome any questions you may have about our project.

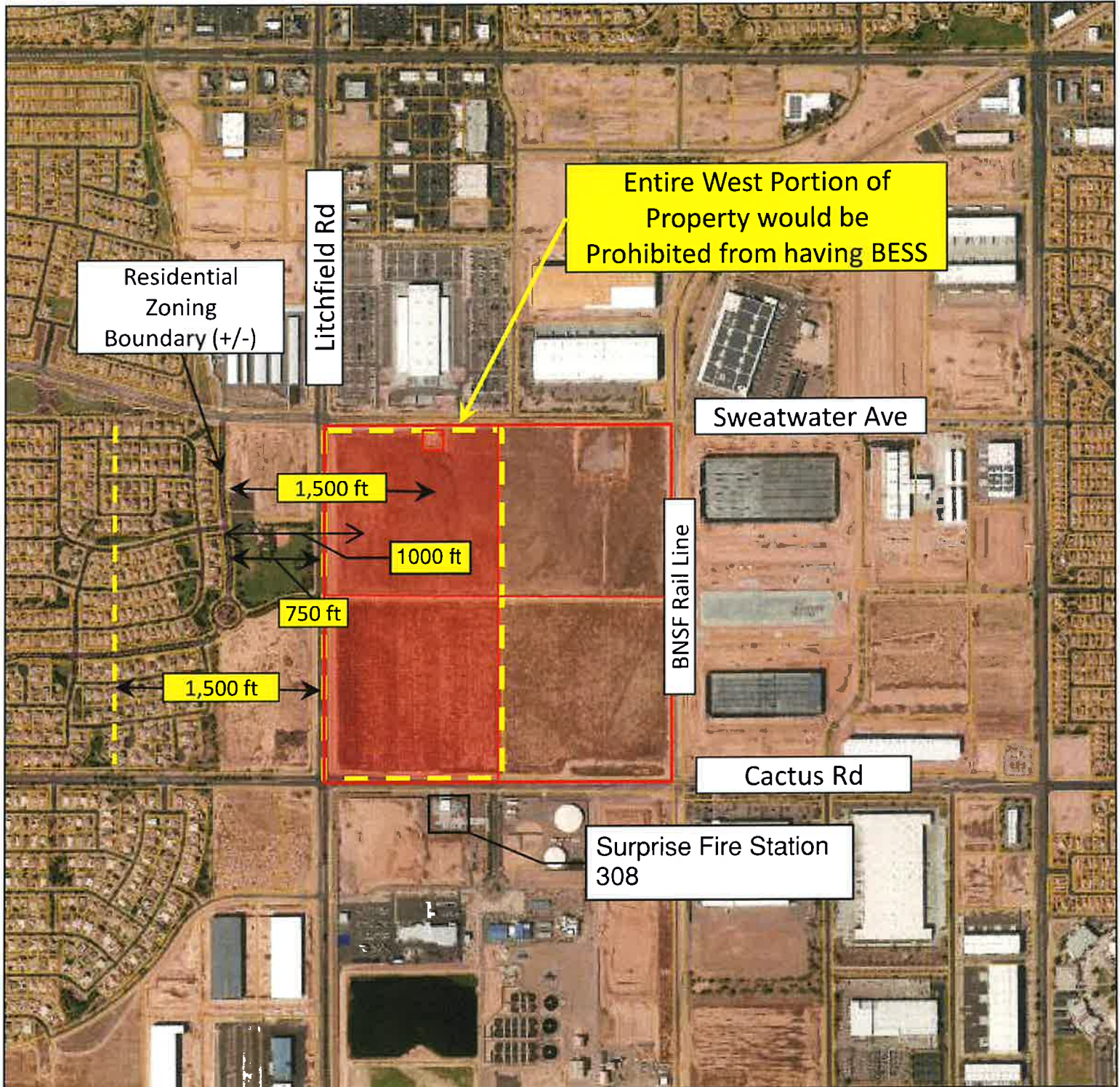
Sincerely,

THE RMH GROUP, INC.

Alberto Barrios Marquez, PE, ATD, LEED AP
Vice President – Mission Critical

Appendix A – Aerial map

Aerial Map



Appendix B – HiTHIUM batteries data sheet

ESS Container

5.016 MWh

Liquid-cooled energy storage system



Liquid-cooled energy storage system based on HiTHIUM prismatic LFP ESS Cells 314 Ah with very high cyclic lifetime.

Improved safety characteristics and specially optimised for the highest requirements on safety, reliability and performance. Suitable e.g. for industrial, utility, and grid serving applications.

- Product certification and compliance:
IEC 62619, IEC 62477, IEC 63056, IEC 61000, UL 1973, UL 9540A, NFPA 855, UN 38.3
- Company certifications:
ISO 9001, ISO 14001, ISO 45001, SA 8000
- Environmental Compliance:
RoHS, REACH, Cobalt free
- Flexible solution:
String or central PCS compliance.

High safety

- High thermal stability thanks to liquid cooling
- Multi-stage, active fire protection system, compliance to NFPA 855
- Use of highly safe prismatic HiTHIUM LFP cells
- Dedicated cell monitoring and protection system

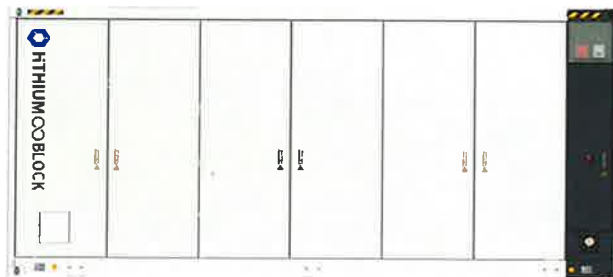
Low LCOS (Levelised Cost of Storage)

- Excellent thermal management improves energy throughput by ensuring optimal operating temperature
- Highly integrated: including thermal management system, fire protection system, BMS, etc.
- Supports back to back and side by side installations

ESS Container

5.016 MWh

Liquid-cooled energy storage system based on prismatic LFP cells with very high cyclic lifetime



GENERAL	
Configuration	6*2P416S
Cooling Method	Liquid Cooling
BMS Communication	CAN, RS485, Ethernet
Gravimetric ED	≥ 125 Wh/kg (≥ 57 Wh/lb)
Volumetric ED	≥ 117 Wh/L (≥ 443 Wh/gal)
Application Altitude	$\leq 4,000$ m (≤ 13123 ft)

ELECTRICAL	
Nominal Voltage	1,331.2 V
Operating Voltage	1,040 V ... 1,500 V
Nominal Energy	5,016 kWh ^{1,2}
Nominal SOC at Delivery	27 % ²
Nominal Charge/Discharge Rate	0.5 P / 0.5 P
Round Trip Efficiency	≥ 94 % ^{1,2}

¹ 0.5 P / 0.5 P

² 25 °C +/- 2 °C
(73.4 °F ... 80.6 °F)

³ ambient temperature

MECHANICAL	
Dimensions (L x W x H)	6,058 x 2,438 x 2,896 mm (238 ½ x 96 x 114 in)
Maximum Weight	40,000 kg (88,185 lb)
Protection Level	IP 55

TEMPERATURE RANGE	
Operating	-30 °C ... 55 °C ³ (-22 °F ... 131 °F)
Storing (Recommended)	-20 °C ... 35 °C ³ (-4 °F ... 95 °F)

PRODUCT CERTIFICATIONS AND COMPLIANCE	
Certificates, Report and Compliance	IEC 62619, IEC 62477, IEC 63056, IEC 61000, UL 1973, UL 9540A, NFPA 855
Safe Transportation	UN 38.3

ENVIRONMENTAL	
Compliance	RoHS, REACH, Cobalt free
Battery Regulation (EU)	2023/1542

COMPANY CERTIFICATIONS	
	ISO 9001, ISO 14001, ISO 45001, SA 8000

HiTHIUM Energy Storage Technology USA Inc.

Address: 4046 Clipper Ct, Fremont, CA 94538, United States

Email: hithium@hithium.com

Xiamen HiTHIUM Energy Storage Technology Co., Ltd.

Address: HiTHIUM Industrial Park, Tongxiang High Tech Zone,

Xiamen, Fujian, China | Email: hithium@hithium.com



LinkedIn



Website

Appendix C – HiTHIUM fire suppression system

Fire Protection System of ESS Container

1. Introduction

This document describes the layout and the control logic of various fire protection systems in the ESS container (Hithium ∞Block L5015-0.5P V2.0).

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2. Layout and Descriptions

The fire protection system is designed following the NFPA855 installation standard for stationary energy storage system.

The fire protection system includes FACP (Fire alarm control panel), automatic alarm system, ventilation system, aerosol fire extinguishing system and water spray system (Optional).

The ESS container enclosure plates are three-layer structure composed of double steel plate and fireproof rock wool, and the fire resistance rating is greater than 1h.

The interior and exterior decoration materials are all flame retardant materials, and the fire protection grade of the materials is UL94-V0. The combustible gas concentration reduction system is provided with a minimum of 2 hours of standby power according to NFPA 855-2023 section 9.6.5.6.7 (3). The gas detection system is provided with a minimum of 24 hours of standby power and 2 hours in alarm according to NFPA 855-2023 section 9.6.5.6.7 (4).

A secondary power supply is provided for smoke and fire detection systems in accordance with NFPA 72 capable of 24 hours in standby and 2 hours in alarm according to NFPA 855-2023 section 4.8.3.

Table2-1 Introduction of fire protection system button

No.	Item	Quantity	Function
1	Ventilation system emergency start/stop button	1	Manually Start or Stop the Fan.
2	Manual Pull Station	1	When a fire has occurred, aerosol can be manually released.
3	Abort Switch	1	During the delay release period, it can abort the execution of the firefighting operation.
4	Disablement Switch	1	During maintenance period, disconnect the aerosol release circuit to prevent accidental aerosol release.

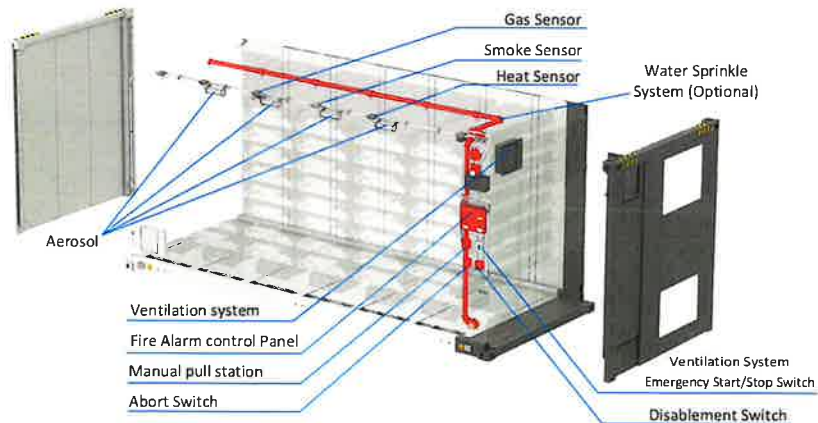


Fig2-1 Fire Protection System

2.1. Automatic Alarm System

The automatic alarm system is mainly composed of FACP, heat detector, smoke detector, alarm bell, horn/strobe, disablement switch, abort switch and manual pull station.

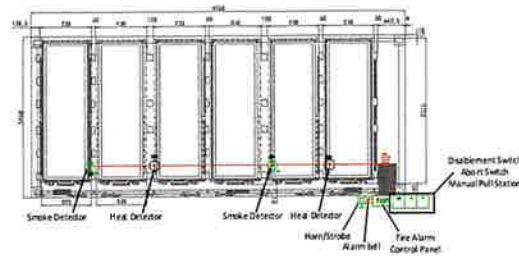


Fig2-2 Automatic Alarm System

2.2. Ventilation System

The ventilation system mainly consists of combustible gas detector, fan controller, air inlet electric shutter and exhaust fan.

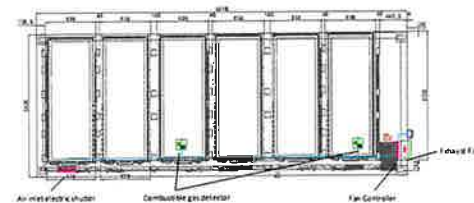


Fig2-3 Air Inlet and Exhaust System

2.3. Aerosol Fire Extinguishing System

The aerosol fire extinguishing system is mainly composed of 4 aerosols.

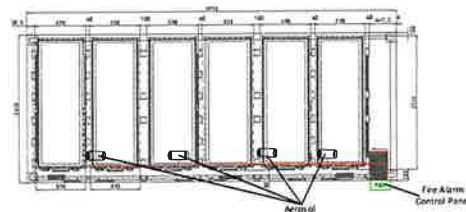


Fig2-4 Aerosol Fire Extinguishing System

2.4. Water Spray System

The water spray system is mainly composed of sprinklers and pipes.

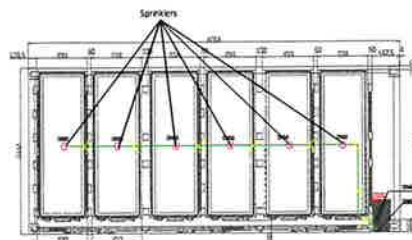


Fig2-5 Water Spray System

DN65 quick connector shall be reserved for connecting outdoor fire hydrant or fire truck.

2.5. Fire Protection System Diagram

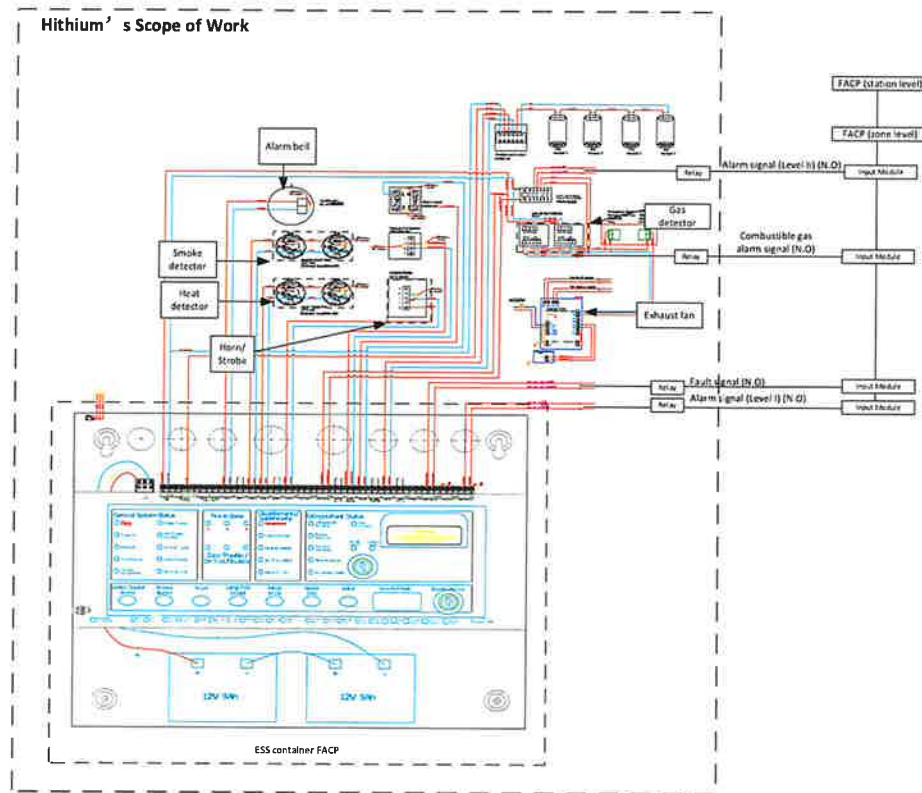
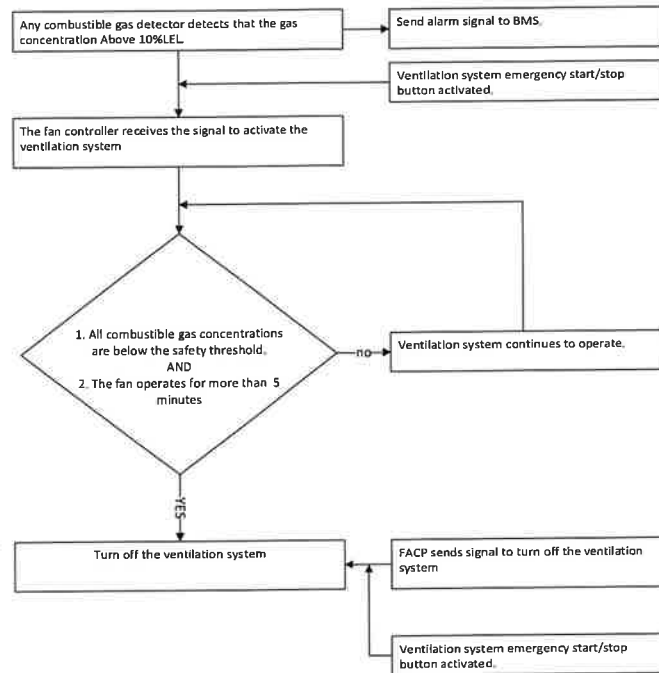


Fig2-6 Fire Protection System Diagram

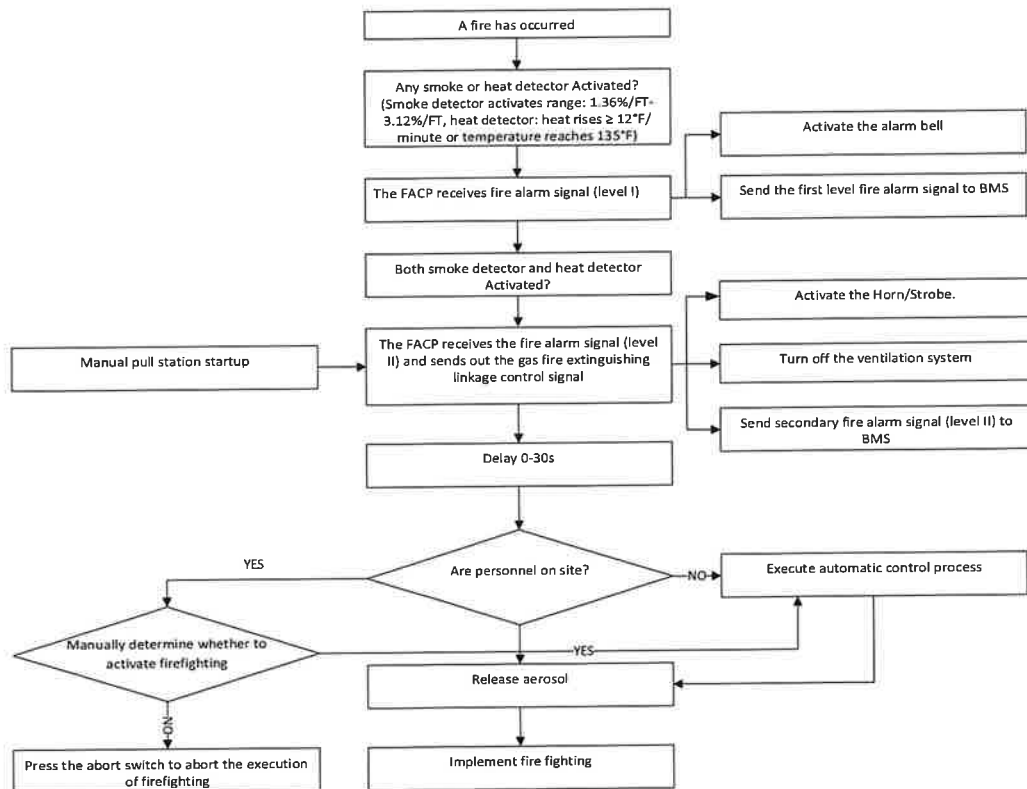
As shown above, four of dry contact output signals will be exported from the ESS fire protection system, which include Alarm signal (level I), Alarm signal (level II), Fault signal and Combustible gas alarm signal. These four signals shall be transmitted to the input modules in the ESS container, and then connects to the station level FACP/zone level FACP (for large projects) for communications.

3. Control Logic of Fire Extinguishing Process

3.1. Control Logic of Air Inlet and Exhaust System



3.2. Control Logic of Automatic Fire Protection System



4. Configuration List

No	Item	Unit	Quantity	Compliance
1	Fire alarm control panel	pcs	1	UL 864
2	Battery	pcs	2	UL 1989
3	Smoke detector	pcs	2	UL 268
4	Heat detector	pcs	2	UL 521
5	Detector base	pcs	4	UL 521
6	Abort switch	pcs	1	UL 864
7	Manual pull station	pcs	1	UL 38
8	Disablement switch	pcs	1	UL 864
9	Horn/Strobe	pcs	1	UL 1971
10	Alarm bell	pcs	1	UL 464
11	Relay	pcs	1	UL 508
12	Aerosol	pcs	4	UL 2775
13	Aerosol bracket	pcs	4	N/A
14	Hydrogen detector (H2)	pcs	2	UL 61010
15	Electric ventilation louver	pcs	1	UL 962
16	Exhaust fan	pcs	1	EN IEC 60079
17	Ventilation system emergency start/stop button	pcs	1	UL 508
18	Sprinkler	pcs	6	UL 199
19	Quick connector	pcs	1	H28
20	Installation accessories	Set	1	N/A

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February 18, 2024

City of Surprise
Community Development
16000 N. Civic Center Plaza
Surprise, AZ 85374

RE: City of Surprise Battery Energy Storage System (BESS) Ordinance (Chapter 106, Article X, Sec. 106-10.22)

Dear Mr. Abrams and Community Development Staff,

The Arizona Solar Energy Industries Association (AriSEIA) is the State's solar, storage, and electrification trade association. We are active on energy policy issues at every level of government in Arizona. We have previously engaged on the City of Eloy, Mohave County, City of Buckeye, Town of Chino Valley, and Yavapai County solar/storage ordinances. Between Option 1 and Option 2, we prefer Option 2. However, we recommend the City consider an Option 3. Namely, we think the ordinance should be split between battery energy storage systems (BESS) and hazardous materials. The setbacks for those different types of facilities should be different and combining them increases fear and misinformation about BESS and clean energy broadly. Additionally, the definitions need to be modified and should be clear that they do not apply to solar or to distributed generation or storage. Finally, we continue to recommend the setbacks be based on evidence and best practices. **We recommend that the City reduce the BESS 1,500' setback from residential property (B) requirement to 150'.** We also recommended adding a waiver provision to the Article.

Glossary

It is unclear why there are multiple definitions for battery storage and additional definitions for energy storage. The ordinance should keep the first definition for BESS. Energy Production should be completely removed from the glossary and title as the ordinance applies to storage and not generation, such as solar. Nothing in the glossary pertains to manufacturing. The definitions for Battery Storage and Manufacturing, Energy Production and Storage Facilities, and Energy Storage Facilities are redundant. The section on Hazardous Material should be a separate ordinance. The glossary should be clear that the ordinance only applies to utility/grid scale projects and not any distributed, behind the meter projects, such as residential or commercial.

Setbacks

The setbacks in (A) and (B) should be from the structure, not the property line. If the intent of the setback is for evacuation purposes, it makes sense to only measure from a dwelling unit. The 1,500 setback in (B) is not based on a setback from any other jurisdiction, a recommendation from the National Fire Protection Association (NFPA), or best practices. The American Planning Association found the national setback average for BESS-specific setbacks used distances of 50-150 feet from property lines.¹ The BESS 1,500' setback requirement is significantly above BESS setback standards in other jurisdictions and will restrict clean energy development in the City of Surprise. While the

¹ American Planning Association, Zoning Practice, P.10 (Mar. 2024), available here https://planning-org-uploaded-media.s3.amazonaws.com/publication/download_pdf/Zoning-Practice-2024-03.pdf.

NFPA recommends 100', we recommend no more than 150' based on the Phoenix Regional Standard Operating Procedures Battery Energy Storage Systems policy.² In the event the City will not consider the most conservative end of the range based on a nationwide review, we recommend no larger than a 500' setback, commensurate with subsection (A).

The American Clean Power Association (ACP) provides a helpful FAQ that covers questions about battery safety and air emissions.³ ACP also has a Claims v. Facts one-pager on battery safety, included again as **Attachment B**. "It should also be noted that the average emissions rates of equivalent masses of plastics exceed those of batteries."⁴ Additionally, sampling was done by the Environmental Health Division and the U.S. Environmental Protection Agency (EPA) after the Moss Landing incident and "no threat to human health or the surrounding environment" was found.⁵ All electricity generation and energy storage creates some amount of risk. However, battery incidents represent only 2% of battery installations.⁶ Setbacks for batteries should not be more onerous than setbacks for other energy storage devices, such as those that contain fossil fuels.

In (B) we agree that any setback required should be from the dwelling unit like the Yavapai County ordinance, not the lot line. And it should be measured from the actual BESS structures, not an overall project site that might also include solar.

Waiver Provision

The Ordinance should include a waiver provision in the event a project proposal conflicts with some component of the Ordinance, but is otherwise an ideal site. The City of Eloy Solar and BESS Ordinance includes such a provision.⁷

We have attached a draft Option 3 as **Attachment A**. Thank you for your time and consideration and we look forward to continuing to engage with the City on this Ordinance as the stakeholder process progresses.

Respectfully,
Autumn Johnson
Executive Director
AriSEIA



² City of Phoenix, Battery Energy Storage Systems, April 2023, *available here*

<https://www.phoenix.gov/firesite/Documents/205.20A%20Battery%20Energy%20Storage%20Systems.pdf>.

³ American Clean Power Association, Energy Storage: Safety FAQ, *available here* <https://cleanpower.org/wp-content/uploads/gateway/2023/07/ACP-ES-Product-4-BESS-Safety-FAQs-230724.pdf>.

⁴ Consolidated Edison and NYSERDA, Considerations for ESS Fire Safety, Feb. 9, 2017, at iii, *available here* <https://www.nyserda.ny.gov/-/media/Project/Nyserda/files/Publications/Research/Energy-Storage/20170118-ConEd-NYSERDA-Battery-Testing-Report.pdf>.

⁵ County of Monterey, Air Quality Testing Information and Process During Moss Landing Fire Incident, Sept. 30, 2022, *available here* <https://www.countyofmonterey.gov/Home/Components/News/News/9345/1336>.

⁶ California Public Utility Commission, Energy Storage Procurement Study: Safety Best Practices, 2023, *available here* https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/energy-storage/2023-05-31_lumen_energy-storage-procurement-study-report-attf.pdf.

⁷ Eloy Ordinance, 21-3-1.39, *available here* https://codelibrary.amlegal.com/codes/eloyaz/latest/eloy_az/0-0-0-9381.

ATTACHMENT A

Supplemental development standards.

Sec. 101-2.2. - Glossary of terms.

Battery Energy Storage System (BESS) - Electrochemical devices that charge, or collect, energy from the grid or a generation facility, store that energy, and then discharge that energy at a later time to provide electricity or other grid services at the grid scale. This ordinance is not meant to apply to behind the meter projects.

BESS Cabinet - An enclosure within a BESS that houses the electrochemical device that charges or collects and stores energy to discharge later and related components.

Chapter 106 - ZONING AND USE STANDARDS

ARTICLE X. - USE SPECIFIC STANDARDS

Sec. 106-10.22. - Battery Storage

- A. Shall be located no closer than one hundred and fifty (150) feet to an existing residential dwelling unit on a residentially-zoned parcel, measured in a straight line in any direction from the outermost BESS cabinet to the closest exterior wall of the main residential dwelling unit.
- B. Shall have prepared and approved by the City of Surprise Fire Department, an Emergency Mitigation Plan prior to review by Planning and Zoning Commission. The Plan should be updated prior to building permit issuance to include technology-specific details no available at the time of review by Planning and Zoning Commission.
- C. Shall have prepared a noise study of the project that depicts the impact to surrounding properties and provides mitigation criteria to ensure the post-construction noise levels associated with the project's operation do not exceed an exterior noise level of **60 dBA** at the nearest existing dwelling unit.
- D. Shall have prepared and reviewed with the City of Surprise Fire Department, a Commissioning Plan in accordance with NFPA 855 prior to commissioning.
- E. Shall have prepared and reviewed with the City of Surprise Fire Department, a Decommissioning Plan in accordance with NFPA 855 prior to commissioning.
- F. Energy storage facilities shall:
 - (I) Incorporate an 8-foot-to 12-foot high perimeter wall or fence to prevent unauthorized access to the facility and screen the Battery energy storage systems. Wall(s) or fence(s) shall be designed to include changes in the surface plane, variable heights, articulated recesses and offsets to avoid the construction of long, unbroken and monotonous expanses of wall(s) or fence(s).
 - (II) Minimize grading to maintain natural landform.
 - (III) Maintain a 10-foot landscape setback along the outside perimeter of the project site, no landscaping shall be located inside the perimeter wall.
 - (IV) Landscaping within the front yard, or any street side/rear yard area shall be landscaped in accordance with the city's Land Development Ordinance.
 - (V) Storage facilities shall be self-contained and shall not contain any internal access for human occupancy.
 - (VI) Shall have a report detailing 24/7 security surveillance and notification systems prior to commissioning.
- G. The ability to modify or waive any provision of this ordinance may only occur with a formal written request to the City Council by the applicant.

ATTACHMENT B

Energy Storage Leading on Safety

Utility-scale battery energy storage is safe and highly regulated, growing safer as technology advances and as regulations adopt the most up-to-date safety standards.

Background

Energy storage systems (ESS) are critical to a clean and efficient electric grid, storing clean energy and enabling its use when it is needed. Installation is accelerating rapidly—as of Q3 2023, there was seven times more utility-scale energy storage capacity operating than at the end of 2020. This growth is driving job creation, investment in American manufacturing, and is improving grid resilience and energy security.

However, because energy storage technologies are generally newer than most other types of grid infrastructure like substations and transformers, there are questions and claims related to the safety of a common battery energy storage technology, lithium-ion (Li-ion) batteries. All of these questions and claims can be addressed with facts. The industry continues to address these concerns to ensure community confidence in this increasingly essential electric grid infrastructure.

CLAIM: The incidence of battery fires is increasing.

FACTS: Energy storage battery fires are decreasing as a percentage of deployments.

- Between 2017 and 2022, U.S. energy storage deployments increased by more than 18 times, from 645 MWh to 12,191 MWh¹, while worldwide safety events over the same period increased by a much smaller number, from two to 12².
- During this time, codes and standards regulating energy storage systems have rapidly evolved to better address safety concerns.



CLAIM: Today's larger battery systems use tens of thousands of cells, so fires are inevitable.

FACTS: Cell failure rates are extremely low, and safety features in today's designs further reduce the probability of fires.

- One estimate from 2012 quotes a failure rate ranging from 1 in 10 million to 1 in 40 million cells³, and there are undoubtedly improvements from these levels.
- Lithium-ion batteries experience extremely low failure rates, as shown by electric vehicle data.
 - Tesla alone sold nearly 900,000 vehicles in the first half of 2023⁴. These sales of new vehicles represent around three-quarters of a billion cells, but safety events involving all EVs on the road globally, from all manufacturers, amounted to just a few dozen fires.
- Today's energy storage systems (ESSs) predominantly use safer lithium-iron phosphate (LFP) chemistry, compared with the nickel-manganese-cobalt (NMC) technology found in EVs.
 - LFP cell failure results in less energy release and a lower probability of fire.
- ESS designs incorporate features to avoid propagation of cell failure within the battery, contributing to improved safety.

¹ US Energy Storage Monitor, Q1 2023 full report and 2022 Year in Review, Wood Mackenzie Power & Renewables/American Clean Power Association, <https://www.woodmac.com/industry/power-and-renewables/us-energy-storage-monitor/>

² Electric Power Research Institute, BESS Failure Event Database, https://storagewiki.epri.com/index.php/BESS_Failure_Event_Database

³ D. Doughty, Vehicle Battery Safety Roadmap Guidance, National Renewable Energy Laboratory, October 2012, <https://doi.org/10.2172/1055366>

⁴ EV sales: Hyundai overtakes GM, but Tesla's U.S. dominance continues

CLAIM: E-bike and e-scooter fires have resulted in deaths—so large batteries for energy storage may be even more deadly.

FACTS: No deaths have resulted from energy storage facilities in the United States. Battery energy storage facilities are very different from consumer electronics, with secure, highly regulated electric infrastructure that use robust codes and standards to guide and maintain safety.

- E-mobility devices have been lightly regulated in the past, and some products have used poor-quality battery cells and ineffective safety systems.
- They are also charged inside homes, sometimes along egress routes, creating a high level of risk.
- Like EV batteries, ESS battery systems are highly regulated and subject to stringent certification and testing requirements.
- The difference in regulation is evident in vehicle statistics. Worldwide, for the first half of 2023, EV FireSafe cites 500+ light electric vehicle (E-bike and E-scooter) battery fires, but only 44 passenger EV fires⁵.
- Additionally, utility-scale energy storage systems are located within secure facilities with site plans explicitly designed around maximizing safety of those operating the facilities and their neighbors.
- The ESS industry meets with and shares best practices with first responders and communities.
- Lessons learned from earlier ESS incidents have been reflected in the evolution of codes and standards. Often, companies go beyond mandatory testing to test more extreme failure scenarios.
- Altogether, like other electric grid infrastructure, energy storage systems are highly regulated and there are established safety designs, features, and practices proven to eliminate risks to operators, firefighters, and the broader community.
- The industry is committed to meeting these standards, such as NFPA 855, which are regularly updated to reflect the latest evidence-based best practices.



Photo credit: AES

CLAIM: Battery fires emit toxic fumes and pose a risk to the community

FACTS: Past incidents demonstrate that fires are contained within the facility, and air quality in neighboring areas remains at safe levels.

- Laboratory testing of emissions from Li-ion cells in thermal runaway shows that emissions are similar to those found in plastics fires⁶.
- During an ESS battery fire, only trace amounts of chemicals are detected in sampling around the event, and overall air quality remains at safe levels.
- During a fire at a Tesla Megapack at Moss Landing in California, air-quality testing showed no hazards to human health⁷.

CLAIM: Fire suppression systems should be mandatory for all lithium-ion battery systems.

FACTS: Regulations that aren't vetted by organizations like the National Fire Protection Association or are inconsistent with the International Fire Code may make projects less safe.

- Established national and international codes and standards already require BESS to incorporate the appropriate safety features to contain any potential fires or thermal events.
- Successful suppression of a fire does not guarantee that the underlying thermal runaway event has been terminated, so containing a fire is the best way to protect first responders and communities.
- The energy storage industry is working to avoid events such as the explosion at an installation in McMicken, Arizona, in which four firefighters were injured⁸. Prior to this event, the industry was focused on extinguishing fires as quickly as possible, but McMicken showed that explosion can be a greater hazard and fire containment is a better strategy.
- The accepted best practice for the rare ESS fires that do occur is to contain them, managing the burn of the limited affected unit in a controlled manner while protecting nearby structures and equipment. This strategy eliminates any explosion hazard, avoids issues with stranded energy and reignition, and minimizes contaminated runoff of firefighting water.
- Codes and standards are changing to reflect this practice, placing an emphasis on explosion prevention. One proposal for the 2026 edition of NFPA 855, *Standard for the Installation of Stationary Energy Storage Systems*, would forbid installation of traditional clean-agent or aerosol fire suppression systems unless testing demonstrates that use of such systems does not create an explosion risk.

⁵ EV FireSafe, All Electrified Transport LIB Fire Incidents, Global, 1st January to 30th June 2023, <https://www.evfiresafe.com/ev-battery-fire-overview>.

⁶ DNV-GL, *Considerations for ESS Fire Safety. Report for Consolidated Edison and NYSEERDA*, 2017.

⁷ Air quality testing showed no hazards to human health amid battery fire in Moss Landing.

⁸ Arizona ESS Explosion Investigation and Line of Duty Injury Reports Now Available.



January 5, 2026

City of Surprise
Community Development
16000 N. Civic Center Plaza
Surprise, AZ 85374

RE: City of Surprise Battery Energy Storage System (BESS) Ordinance (Chapter 106)

Dear Community Development Staff,

The Arizona Solar Energy Industries Association (AriSEIA) appreciates the opportunity to provide continued comments on the City of Surprise draft Battery Energy Storage System (BESS) ordinance. AriSEIA is the statewide trade association representing solar, energy storage, and electrification companies operating across Arizona. We have previously provided written comments to the City on November 14, 2024, and February 18, 2024, and appreciate the City's ongoing engagement on this important topic.

After reviewing the most recent draft ordinance, we respectfully submit the following comments. While we acknowledge improvements in certain areas, several significant issues remain unresolved. These issues relate to scope, applicability, internal consistency, technical alignment with nationally adopted standards, and practical implementation.

1. Applicability and Scope of the Ordinance

The draft ordinance does not clearly and unambiguously limit its applicability to utility-scale, grid-connected battery energy storage systems. As written, the ordinance does not expressly exclude behind-the-meter residential or commercial battery systems.

This creates material ambiguity as to whether the ordinance could apply to:

- Residential battery systems installed in garages or attached structures,
- Commercial batteries paired with rooftop solar at small businesses,
- Batteries installed for onsite resiliency or backup power.

Zoning ordinances are interpreted based on their plain language. Reliance on enforcement discretion to narrow applicability is insufficient and exposes the City to appeals, inconsistent enforcement, and potential legal challenges. AriSEIA has raised this concern in prior letters, and it remains unaddressed.

The ordinance should clearly state that it applies only to utility-scale, grid-connected battery energy storage systems and does not apply to residential or commercial behind-the-meter installations. This clarification is essential to avoid unintended consequences and ensure the ordinance functions as intended.

2. Zoning Classification and Use Category

The ordinance establishes a standalone “BESS” zoning district and use category. This approach unnecessarily isolates energy storage from other forms of energy infrastructure that are often complementary in generating electricity and improving grid reliability.

AriSEIA recommends that the zoning district and use category be titled “Energy,” rather than “BESS,” and that utility-scale solar generation be included as a permitted or accessory use within the same category. This approach is consistent with Maricopa County and other Arizona jurisdictions and avoids the need for future piecemeal amendments as energy technologies continue to evolve.

3. Setbacks, Including the 1,500-Foot Residential Setback

The proposed 1,500-foot setback from residential properties remains a significant concern. This setback is not supported by National Fire Protection Association (NFPA) standards, peer jurisdiction practices, or empirical safety data. Nationally, BESS-specific setbacks typically range from 50 to 150 feet.¹

In addition, the ordinance does not consistently specify from what point setbacks are measured. Where setbacks are imposed, they should be measured from the BESS structures themselves to the nearest residential dwelling unit, not from property lines or from an overall project boundary that may include solar generation. Excessive setbacks that are not tied to adopted safety standards unnecessarily constrain site availability, reduce project feasibility, and do not provide demonstrable safety benefits.

4. Internal Container Separation Distances

The draft ordinance requires a 10-foot separation between battery containers. This requirement exceeds NFPA 855, which allows a 3-foot separation for remote facilities. Deviation from nationally adopted fire codes without a technical justification creates inconsistency, increases costs, and does not improve safety. Separation between containers should be governed by NFPA 855, not by a locally imposed standard that is more than three times more restrictive.

5. Noise Standard

The ordinance imposes a maximum noise level of 60 dBA at the nearest existing dwelling unit. This threshold is unusually low for utility or industrial infrastructure and is often equivalent to ambient background noise levels in urban and suburban environments.

The ordinance does not distinguish between daytime and nighttime operations, does not account for existing ambient noise, and does not explain why battery energy storage systems should be subject to a more restrictive standard than other permitted infrastructure uses. If a noise standard is retained, it should be aligned with the City’s general noise ordinance, allow for mitigation, and reflect real-world operating conditions.

6. Perimeter Walls, Landscaping, and Associated Setbacks

The ordinance requires perimeter walls and landscaping and further requires these features to be set back 150 feet from other property lines. This requirement lacks a clear nexus to safety, aesthetics, or land-use compatibility.

¹ American Planning Association, Zoning Practice, P.10 (Mar. 2024), available here https://planning-org-uploaded-media.s3.amazonaws.com/publication/download_pdf/Zoning-Practice-2024-03.pdf.

Perimeter walls do not improve fire safety, and landscaping setbacks of this magnitude do not enhance screening or community protection. Instead, they significantly reduce developable area and may render otherwise suitable parcels unusable. In addition, the ordinance does not provide flexibility for circumstances where walls and landscaping are unnecessary for aesthetic purposes or where irrigation is not advisable due to water conservation concerns.

AriSEIA recommends adding administrative flexibility allowing staff to approve alternative perimeter treatments, including fencing without walls or reduced landscaping, where visual impacts are minimal, water use should be avoided, or site conditions warrant an alternative approach. Similar provisions have been successfully adopted by Buckeye and Maricopa County.

7. Timing and Sequencing of Required Plans and Studies

The ordinance requires multiple plans and studies, including emergency mitigation plans, noise studies, security plans, commissioning plans, and decommissioning plans, but does not clearly specify when each must be submitted or approved. This lack of clarity creates uncertainty for applicants and staff and may result in unnecessary delays or duplicative submissions. AriSEIA recommends the following clarifications:

- Commissioning plans should be required prior to building permit issuance.
- Emergency mitigation, noise, security, and decommissioning plans should be required prior to issuance of a certificate of occupancy.
- The ordinance should allow updates to plans when technology-specific details are not available at earlier stages.

8. Waivers and Administrative Flexibility

The ordinance limits the ability to modify or waive provisions to City Council action only. This approach is unnecessarily rigid and inconsistent with how similar ordinances are administered elsewhere. AriSEIA continues to recommend inclusion of an administrative waiver or modification process that allows staff to approve reasonable deviations when a project meets the ordinance's safety and compatibility objectives. This flexibility improves outcomes without compromising public safety.

Conclusion

AriSEIA supports reasonable, data-driven regulation of battery energy storage systems. However, the current draft ordinance includes provisions that are internally inconsistent, not aligned with nationally adopted standards, and insufficiently clear as to scope and applicability. Addressing the issues outlined above will result in an ordinance that is safer, clearer, more defensible, and more workable for the City, applicants, and the community.

We appreciate the opportunity to continue engaging with the City of Surprise and look forward to working collaboratively toward an ordinance that reflects best practices and supports responsible energy infrastructure development.

Respectfully submitted,
Autumn Johnson
Executive Director
AriSEIA



January 5, 2026

Director Lloyd Abrams
City of Surprise
Community Development Department
16000 N. Civic Center Plaza
Surprise, AZ 85374

Re: Case No. FS23-1041 – Draft Surprise Zoning Text Amendment Regarding Battery Energy Storage Systems (BESS) Zoning Districts

Dear Director Abrams:

As president and CEO of Arizona Technology Council, the state's premier trade association representing more than 750 science and technology companies, I respectfully submit the following recommendations for consideration prior to the City of Surprise's finalizing amendments to the land development ordinance governing the siting of battery energy storage systems (BESS).

The Council supports an energy strategy that leverages Arizona's diverse mix of clean, reliable and innovative energy resources. Utility-scale BESS projects play an increasingly critical role in maintaining grid reliability with continued expansion of renewable energy generation, particularly solar. These systems store excess energy during periods of high generation and discharge it during peak demand, most notably after sunset. In doing so, they reduce reliance on traditional generation, enhance grid resilience and help stabilize long-term energy costs for residents and businesses. In addition, BESS projects contribute meaningfully to Arizona's economy by creating high-quality jobs in construction, engineering, logistics and advanced manufacturing.

Since the April 19, 2019, incident at the McMicken Battery Energy Storage facility in Surprise, the industry has made significant advances to mitigate the risk of internal battery cell defects and cascading thermal runaway events. Like all technologies, BESS have evolved. Today's facilities are typically designed as modular, outdoor installations consisting of multiple weather-resistant enclosures that house smaller quantities of batteries, with engineered spacing to limit fire propagation. Monitoring, detection and control systems also have advanced substantially, enabling earlier identification of anomalies and preventative intervention.

These technological improvements are reflected in the **2026 edition of the National Fire Protection Association's NFPA 855 standard**, which includes more rigorous fire and explosion testing protocols for stationary energy storage systems. When BESS facilities are designed, sited and operated in compliance with NFPA 855, they are engineered to meet nationally recognized best practices for safety, reliability and long-term performance.

According to the Arizona Commerce Authority, the City of Surprise **in 2025 experienced 4.2% population growth**, more than three times the statewide rate. We appreciate the city's proactive approach to public safety through requirements such as hazard mitigation plans, noise studies and decommissioning plans. However, several elements of the draft amendments may unintentionally create barriers to deployment and limit the city's ability to meet future energy needs.

Specifically, we respectfully recommend the following refinements to the amendments:

- **Separation requirements** – The proposed 1,500-foot separation from residential properties is excessive and not supported by BESS-specific risk assessment data. We strongly encourage the city to adopt the separation distances established in **NFPA 855**, which are based on national science and engineering standards and operational experience. Alignment with NFPA 855 maintains public safety while avoiding unnecessary restrictions on critical energy infrastructure.
- **Noise standards** – Noise regulations should be based on consistent and objective decibel thresholds applied uniformly across comparable land uses. Establishing a separate noise standard solely for BESS facilities introduces regulatory inconsistency and may discourage investment without providing additional public benefit.

- **Waiver provision** – We recommend incorporating a waiver provision into the ordinance to allow flexibility where a proposed project may conflict with a specific requirement but is otherwise well-sited and compliant with national safety standards, and beneficial to the community.

Arizona's innovation-driven economy depends on modern, flexible and resilient energy infrastructure. The City of Surprise has a strong history of supporting advanced industry growth, and we encourage alignment of its zoning policies with national safety standards and best practices that enable responsible deployment of emerging technologies.

Thank you for your leadership and advancing policies that reinforce Surprise's position as a forward-looking and business-friendly community. If the Arizona Technology Council can provide additional data, technical expertise or stakeholder input, we would welcome the opportunity to assist.

Respectfully,

ARIZONA TECHNOLOGY COUNCIL & SCITECH INSTITUTE



Steven G. Zylstra
President & CEO

Christina Sexton

From: SUSAN DRAPER [REDACTED]
Sent: Monday, January 12, 2026 2:01 PM
To: Christina Sexton
Cc: Trever Fleetham; Lloyd Abrams
Subject: Zoning text amendment re BESS

*****The e-mail below is from an external source. Please do not open attachments or click links from an unknown or suspicious origin.*****

I've been thinking about the 1500 ft set back proposed in the amendment. I would not be opposed to reducing that however I would like to know if the worst case scenario happened (a BESS facility has an explosive event), what is the blast radius of that event? I understand with the constantly changing technology that would be difficult to determine but to me that is one determining factor for choosing to live close to one of these facilities. We already have several businesses close to our community that are of concern (Fertizona, the gas facility on Olive, possibly Baccara which is right next to the gas facility - if one blows the others one might too). The blast in West, Texas comes to mind (a fertilizer plant that had 2 blasts milliseconds apart) that killed 15 (including 12 first responders) and injured 200. It demolished schools, a nursing home and damaged hundreds of homes in the surrounding area. I would hate to have something like that happen here.

Just my 2 cents.

Susan

Christina Sexton

From: Mike Johnson [REDACTED]
Sent: Tuesday, February 3, 2026 6:50 AM
To: Christina Sexton; Mike Johnson
Subject: Re: BESS zoning.
Attachments: 1-30-2026 City of Surprise Letter..docx

*****The e-mail below is from an external source. Please do not open attachments or click links from an unknown or suspicious origin.*****

Good morning Christina Sexton,

I added some more important information to my previous letter and hope you could replace it with this one.

Thank you very much and have a great day.

Dear City of Surprise Officials,

Thank you for holding the community outreach meeting on January 7. I appreciated the opportunity to participate and believe the City heard significant public concern, particularly regarding the proposed setbacks for battery energy storage systems (BESS) and the reliability of our current electrical grid.

I would like to offer a specific recommendation for consideration. The City of Buckeye recently adopted a setback requirement of 150 feet from a BESS container to a residential structure. I propose that the City of Surprise adopt a similar standard consisting of a 150-foot setback from residential structures and a 50-foot setback from property lines. This approach reflects a balanced, practical standard that addresses safety while preserving siting feasibility.

Battery energy storage systems are a critical tool for stabilizing the electrical grid, particularly as demand continues to rise in the northwest Valley. The technology continues to improve and becomes safer each year. Maintaining an extreme 1,500-foot setback, as currently proposed, would effectively eliminate approximately 99% of viable BESS sites in the areas where grid support is most urgently needed. When combined with existing safety requirements and safeguards, a 150-foot residential setback and 50-foot property line setback provide more than adequate protection.

As the northwest Valley continues to grow, additional grid support will be essential to meet increasing electricity demand. BESS facilities play a key role in ensuring reliability, resilience, and peak-load management. These sites are clearly marked, properly placarded, and fully disclosed to emergency responders, ensuring transparency and preparedness.

By contrast, electric vehicles and residential charging equipment are widespread, unmarked, and typically unknown to first responders until an incident occurs. In 2024, there were approximately 4,000,000 electric vehicles on the road in the United States. With an estimated fire rate of 25 fires per 100,000 vehicles, this equates to roughly 1,000 electric vehicle or charging-related fires per year. In 2025, sales are projected to add another 4,000,000 to 5,000,000 electric vehicles, bringing the total on U.S. roads to an estimated 8,000,000 to 9,000,000 vehicles by early 2026, or approximately 2,000 to 2,250 electric vehicle or charging-related fires annually at the same rate.

Additional context is important when evaluating relative risk. EV FireSafe reported 36 light-vehicle fire fatalities globally in the first half of 2023, a category that often includes e-scooters and e-bikes in addition to passenger vehicles. EV FireSafe also reports that approximately 15% of electric vehicle fires occur while charging.

By comparison, the total global history of modern grid-scale BESS deployments has resulted in fewer than 2,000 fire incidents worldwide, and there have been no U.S. fatalities directly attributed to grid-scale BESS facilities. This broader context is critical to ensuring that local regulation remains proportional, evidence-based, and aligned with actual safety outcomes.

In addition, the availability of BESS infrastructure often attracts data centers and other critical facilities that require reliable, continuous, and clean power. These investments support economic development while strengthening grid stability in ways that traditional infrastructure alone cannot.

I respectfully ask the City to consider these points carefully when finalizing the code and regulatory framework governing battery energy storage systems. A balanced, science-based approach will allow Surprise to grow responsibly while maintaining safety and reliability for residents.

Thank you for your time and consideration.

Sincerely,
Mike Johnson



On Mon, Jan 26, 2026 at 8:04 AM Mike Johnson  wrote:

Dear City of Surprise Officials,

Thank you for holding the community outreach meeting on January 7. I appreciated the opportunity to participate and believe the City heard significant public concern, particularly regarding the proposed setbacks for battery energy storage systems (BESS) and the reliability of our current electrical grid.

I would like to offer a specific recommendation for consideration. The City of Buckeye recently adopted a setback requirement of 150 feet from a BESS container to a residential structure. I propose that the City of Surprise adopt a similar standard, consisting of a 150-foot setback from residential structures and a 50-foot setback from property lines.

Battery energy storage systems are a critical tool for stabilizing the electrical grid, particularly as demand continues to rise in the northwest Valley. The technology continues to improve and becomes safer each year. Maintaining an extreme 1,500-foot setback, as currently proposed, would effectively eliminate approximately 99% of viable BESS sites in the areas where grid support is most urgently needed. When combined with existing safety requirements and safeguards, a 150-foot residential setback and 50-foot property line setback provide more than adequate protection.

As the northwest Valley continues to grow, additional grid support will be essential to meet increasing electricity demand. BESS facilities play a key role in ensuring reliability, resilience, and peak-load management. These sites are clearly marked, properly placarded, and fully disclosed to emergency responders.

By contrast, electric vehicles and residential charging stations are widespread, unmarked, and typically unknown to first responders until an incident occurs. In 2024, there were approximately 4,000,000 electric vehicles on the road in the United States. With an estimated fire rate of 25 fires per 100,000 vehicles, this equates to roughly 1,000 electric vehicle or charging-related fires per year. In 2025, sales are projected to add another 4,000,000 to 5,000,000 electric vehicles, bringing the total on U.S. roads to an estimated 8,000,000 to 9,000,000 vehicles by early 2026. Using the same rate, that would result in approximately 2,000 to 2,250 electric vehicle or charging-related fires annually. By comparison, the total global history of BESS facilities, as deployed in their modern form, has resulted in fewer than 2,000 incidents worldwide. This context is important when evaluating risk and proportional regulation.

In addition, the availability of BESS infrastructure often attracts data centers and other critical facilities that require reliable, continuous, and clean power. These investments bring economic development while strengthening grid stability in ways that traditional infrastructure alone cannot.

I respectfully ask the City to consider these points carefully when finalizing the code and regulatory framework governing battery energy storage systems. A balanced, science-based approach will allow Surprise to grow responsibly while maintaining safety and reliability for residents.

Thank you for your time and consideration.

*Sincerely,
Mike Johnson*



Christina Sexton

From: Jacqueline Couzens [REDACTED]
Sent: Sunday, February 8, 2026 3:34 PM
To: Christina Sexton
Subject: Re: BESS

*****The e-mail below is from an external source. Please do not open attachments or click links from an unknown or suspicious origin.*****

Sorry to have taken so long to get back to you Christine. I appreciate you sending me the format on zoning procedures. Hopefully if battery storage occurs in the future, everyone will take a close look at surrounding areas and even possible negative effects at this point that storage might create. I firmly believe that potential health problems outweigh monies.
Jackie Couzens

On Wed, Jan 14, 2026 at 7:56 AM Christina Sexton <Christina.Sexton@surpriseaz.gov> wrote:

Good afternoon Ms. Couzens,

Thank you for reaching out regarding the Battery Energy Storage System (BESS) Zone Text Amendment (ZTA).

Just to let you know, there is not a facility that has applied to come into the city. The ZTA is to codify the use standards such as maximum height of walls, lighting, required landscaping to name a few items.

I attached the proposed code for your convenience.

I would be happy to discuss with you further over the phone as it is a lot of information and answer all your questions unless you prefer by email.

Best regards,

Chris Sexton, Senior Planner

City of Surprise|Community Development

16000 N. Civic Center Plaza|Surprise, AZ 85374

Office: 623.222.3134| Fax: 623-222-3001



NOTICE: By participating in any correspondence, telephone conversation, discussion, meeting, or any other communication with a City employee, you agree and acknowledge that: (1) any information provided in a format other than a formal written determination by the designated Zoning Administrator is preliminary in nature and shall not be relied upon for any purpose by the recipient or any other person or entity; (2) any information provided by a City employee is not the equivalent of a title report or a real estate survey; (3) you are responsible for independently researching and verifying the information; (4) a City employee is not authorized to bind the City in any manner, except by formal Zoning Administrator determination; and (5) any error, omission, incorrect information, or false information provided by a City employee shall not give rise to any liability on behalf of the City.

This e-mail and any accompanying files transmitted are intended solely for the use of the individual or entity to whom they are addressed; if you have received this e-mail in error please delete it and notify the sender. In addition, under Arizona law, e-mail communications and e-mail addresses may be public records.

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February 17, 2026

City of Surprise
Community Development
16000 N. Civic Center Plaza
Surprise, AZ 85374

RE: City of Surprise Proposed BESS Ordinance

Dear Community Development Staff,

APS appreciates the opportunity to engage in the city's continued process of adopting a Battery Energy Storage System (BESS) ordinance. While formal comments have not been submitted, we were also grateful for the time dedicated previously to discussing the proposed ordinance and the rapidly changing industry.

City of Surprise, and the extended West Valley, is among the fastest growing regions in Arizona. APS projects a 40% increase in energy demand over the next six years, driven by new growth in various industries locating to your community. As this expansion continues, APS remains focused on meeting demand in ways that ensure reliability, affordability, and sustainability.

Utility-scale battery energy storage projects are essential to that effort. APS has committed to adding more than 2 gigawatts (GW) of battery energy storage during its current action plan, with a maximum of 3 GW through 2027. These investments enable APS to capture excess energy and dispatch when demand peaks. We remain committed to the responsible adoption of this technology as its industry continues to advance – strengthening the grid and benefiting each community within our service territory.

BESS technology will continue to progress and innovate beyond the adoption of the proposed ordinance, making the 1,500-foot setback seemingly outdated and excessive. The proposal today far exceeds the National Fire Protection Association Standards recommendation along with neighboring jurisdictions with recent adopted zoning amendments. APS requests revisiting the setback requirement to provide flexibility for the future and offers additional time to discuss its safety requirements for company BESS projects.

Again, we appreciate the stakeholder process and opportunity to engage with staff as the city considers adopting a new BESS ordinance.

Sincerely,

A handwritten signature in blue ink, appearing to read "J. Perry", with a long, sweeping horizontal line extending to the right.

Jessica Perry
APS Public Affairs Manager Sr.

March 24, 2026

Chair Ken Chapman
Vice Chair Anthony Spata
Jared Holland
Kevin Perry
Dennis Bash
Jay Leonard
Lisa Everett

Re: Comments regarding City of Surprise BESS ordinance draft

Dear Chair Chapman, Vice Chair Spata, and members of the commission,

[Mormon Women for Ethical Government](#) (MWEG) Arizona is composed of women in the city of Surprise and throughout the state who firmly believe in our responsibility to be good stewards of the earth's resources while ensuring that the city's families and businesses have access to safe, reliable, and affordable electricity. For these reasons, we support battery energy storage system (BESS) technology.

BESS is an essential component of modernizing the city's electrical grid and will stabilize and economize the energy supply. It delivers a rapid and precise balance between supply and demand, provides essential backup power during outages, and helps maintain steady voltage levels across the distribution network. This reduces electricity costs for utilities and consumers.

BESS can be thoughtfully integrated within communities while adhering to appropriate design and safety protocols, which should be mandated by local ordinances. We encourage Surprise to adopt the [standards](#) recommended by the National Fire Protection Association (NFPA 855), including a 50-150 foot property line setback. According to the [American Planning Association](#), this is the distance range that most of the examined jurisdictions used. Experts consider this a safe distance for BESS facilities, especially when combined with other safety measures like fire suppression systems and adherence to national safety codes.

BESS have shown minimal auditory impact on adjacent properties. Sound caused by BESS at close distances can range from [60-80](#) decibels (dB). This is comparable to a typical conversation (60 dB), and the sound within a car (80 dB). With the setbacks and screening standards in NFPA 855, neighboring properties should experience minimal sound.

The current draft recommendation of a 1,500 foot setback from residences is overly restrictive, potentially limiting the number of viable sites where BESS projects could be developed in

Women of faith building a more peaceful, just, and ethical world.



Surprise. This setback would drastically reduce the availability of land with existing infrastructure to support interconnection of a BESS facility to the grid. The cost of the system itself would increase due to the longer roads and added wiring and cables needed for a larger-than-necessary setback.

Maricopa County recently modernized their zoning ordinance and is a good model for Surprise. We especially encourage the commission to consult the American Clean Power Association's [model ordinance](#). This model was drawn from a variety of sources, including: NFPA, national fire safety standards, guidance established by national energy laboratories, existing state laws and local regulations, firefighters, fire protection professionals, and safety experts.

With an ordinance that allows for the safe implementation of BESS technology without being unnecessarily restrictive, Surprise will be the example for other cities throughout the state for renewable energy ordinances.

Thank you for your service on the Planning and Zoning Commission and to the citizens of Surprise.

Respectfully,

Kelsey Royer
Surprise Resident

Jane Andersen
MWEG Arizona State Director

Amber Daniel
MWEG Arizona Environmental Specialist

Amanda Curtis
MWEG Arizona Advocacy Committee Member



www.ariseia.org
7144 E. Stetson Dr., Suite 300
Scottsdale, AZ 85251

November 14, 2024

City of Surprise
Community Development
16000 N. Civic Center Plaza
Surprise, AZ 85374

RE: City of Surprise Battery Energy Storage System (BESS) Ordinance (Chapter 106, Article X, Sec. 106-10.22)

Dear Mr. Abrams and Community Development Staff,

The Arizona Solar Energy Industries Association (AriSEIA) is the State's solar, storage, and electrification trade association. We are active on energy policy issues at every level of government in Arizona. We have previously engaged on the City of Eloy, Mohave County, and Yavapai County solar ordinances. We only became aware of this pending ordinance draft on November 6th and apologize that our comments were not provided to you earlier in your process. We very much hope to continue to be engaged with the City as this process progresses. Our primary comments for the purposes of this letter pertain to the setback from residences and the lack of a waiver provision. **We recommend that the City reduce the BESS 1,500' setback from residential property (B) requirement to 150'. We also recommended adding a waiver provision to the Article.**

AriSEIA understands and is sensitive to the fact that the McMicken Battery Energy Storage System failure happened in Surprise and that many City Staff were personally involved and impacted. We believe that APS and local governments have learned greatly from that experience.¹

Setbacks

The American Planning Association found the national setback average for BESS-specific setbacks used distances of 50-150 feet from property lines.² The BESS 1,500' setback requirement is significantly above BESS setback standards in other jurisdictions and will restrict clean energy development in the City of Surprise.³ We recommend 150' based on the Phoenix Regional Standard Operating Procedures Battery Energy Storage Systems policy.⁴ The American Clean Power Association (ACP) provides a helpful FAQ that covers questions about battery safety and

¹ APS, McMicken Battery Energy Storage System Event Technical Analysis and Recommendations, July 18, 2020, available here <https://www.aps.com/-/media/APS/APSCOM-PDFs/About/Our-Company/Newsroom/McMickenFinalTechnicalReport.pdf?la=en&hash=37F06DD16761765FD61DDA9AE7C9C4EF>.

² American Planning Association, Zoning Practice, P.10 (Mar. 2024), available here https://planning-org-uploaded-media.s3.amazonaws.com/publication/download_pdf/Zoning-Practice-2024-03.pdf.

³ We have included our Maricopa County economic impact study as **Attachment B** and our water analysis as **Attachment C**.

⁴ City of Phoenix, Battery Energy Storage Systems, April 2023, available here <https://www.phoenix.gov/firesite/Documents/205.20A%20Battery%20Energy%20Storage%20Systems.pdf>.

air emissions.⁵ ACP also has a Claims v. Facts one-pager on battery safety, included here as **Attachment A**. “It should also be noted that the average emissions rates of equivalent masses of plastics exceed those of batteries.”⁶ Additionally, sampling was done by the Environmental Health Division and the U.S. Environmental Protection Agency (EPA) after the Moss Landing incident and “no threat to human health or the surrounding environment” was found.⁷ All electricity generation and energy storage creates some amount of risk. However, battery incidents represent only 2% of battery installations.⁸ Setbacks for batteries should not be more onerous than setbacks for other energy storage devices, such as those that contain fossil fuels.

In (B) we agree that any setback required should be from the dwelling unit, not the property line. However, the second half of that section makes it unclear from which we are measuring. What does “residential properties” mean when referencing PAD, R-1, R-2, or R-3? We recommend it measure from the dwelling unit or residence.

Waiver Provision

The current Ordinance draft covers the primary land use matrix for all zoning districts in Surprise. The Ordinance should include a waiver provision in the event a project proposal conflicts with some component of the Ordinance, but is otherwise an ideal site. The City of Eloy Solar and BESS Ordinance includes such a provision.⁹ We recommend adding language such as that included in 21-3-1.39(B) of Eloy’s Ordinance.

Other

We appreciate the references to NFPA 855. We also appreciate the specificity of the site plan requirements in (G). Finally, it seems this is a discretionary process. It would be helpful to clarify on what basis a permit may be denied even if all requirements are met and whether there is any appeal process or ability to cure.

Thank you for your time and consideration and we look forward to continuing to engage with the City on this Ordinance as the stakeholder process progresses.

Respectfully,
Autumn Johnson
Executive Director
AriSEIA



⁵ American Clean Power Association, Energy Storage: Safety FAQ, available here <https://cleanpower.org/wp-content/uploads/gateway/2023/07/ACP-ES-Product-4-BESS-Safety-FAQs-230724.pdf>.

⁶ Consolidated Edison and NYSEDA, Considerations for ESS Fire Safety, Feb. 9, 2017, at iii, available here <https://www.nyserda.ny.gov/-/media/Project/Nyserda/files/Publications/Research/Energy-Storage/20170118-ConEd-NYSEDA-Battery-Testing-Report.pdf>.

⁷ County of Monterey, Air Quality Testing Information and Process During Moss Landing Fire Incident, Sept. 30, 2022, available here <https://www.countyofmonterey.gov/Home/Components/News/News/9345/1336>.

⁸ California Public Utility Commission, Energy Storage Procurement Study: Safety Best Practices, 2023, available here https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/energy-storage/2023-05-31_lumen_energy-storage-procurement-study-report-attf.pdf.

⁹ Eloy Ordinance, 21-3-1.39, available here https://codelibrary.amlegal.com/codes/eloyaz/latest/eloy_az/0-0-0-9381.

ATTACHMENT A

Energy Storage Leading on Safety

Utility-scale battery energy storage is safe and highly regulated, growing safer as technology advances and as regulations adopt the most up-to-date safety standards.

Background

Energy storage systems (ESS) are critical to a clean and efficient electric grid, storing clean energy and enabling its use when it is needed. Installation is accelerating rapidly—as of Q3 2023, there was seven times more utility-scale energy storage capacity operating than at the end of 2020. This growth is driving job creation, investment in American manufacturing, and is improving grid resilience and energy security.

However, because energy storage technologies are generally newer than most other types of grid infrastructure like substations and transformers, there are questions and claims related to the safety of a common battery energy storage technology, lithium-ion (Li-ion) batteries. All of these questions and claims can be addressed with facts. The industry continues to address these concerns to ensure community confidence in this increasingly essential electric grid infrastructure.

CLAIM: The incidence of battery fires is increasing.

FACTS: Energy storage battery fires are decreasing as a percentage of deployments.

- Between 2017 and 2022, U.S. energy storage deployments increased by more than 18 times, from 645 MWh to 12,191 MWh¹, while worldwide safety events over the same period increased by a much smaller number, from two to 12².
- During this time, codes and standards regulating energy storage systems have rapidly evolved to better address safety concerns.



CLAIM: Today's larger battery systems use tens of thousands of cells, so fires are inevitable.

FACTS: Cell failure rates are extremely low, and safety features in today's designs further reduce the probability of fires.

- One estimate from 2012 quotes a failure rate ranging from 1 in 10 million to 1 in 40 million cells³, and there are undoubtedly improvements from these levels.
- Lithium-ion batteries experience extremely low failure rates, as shown by electric vehicle data.
 - Tesla alone sold nearly 900,000 vehicles in the first half of 2023⁴. These sales of new vehicles represent around three-quarters of a billion cells, but safety events involving all EVs on the road globally, from all manufacturers, amounted to just a few dozen fires.
- Today's energy storage systems (ESSs) predominantly use safer lithium-iron phosphate (LFP) chemistry, compared with the nickel-manganese-cobalt (NMC) technology found in EVs.
 - LFP cell failure results in less energy release and a lower probability of fire.
- ESS designs incorporate features to avoid propagation of cell failure within the battery, contributing to improved safety.

¹ US Energy Storage Monitor, Q1 2023 full report and 2022 Year in Review, Wood Mackenzie Power & Renewables/American Clean Power Association, <https://www.woodmac.com/industry/power-and-renewables/us-energy-storage-monitor/>

² Electric Power Research Institute, BESS Failure Event Database, https://storagewiki.epri.com/index.php/BESS_Failure_Event_Database

³ D. Doughty, Vehicle Battery Safety Roadmap Guidance, National Renewable Energy Laboratory, October 2012, <https://doi.org/10.2172/1055366>

⁴ EV sales: Hyundai overtakes GM, but Tesla's U.S. dominance continues

CLAIM: E-bike and e-scooter fires have resulted in deaths—so large batteries for energy storage may be even more deadly.

FACTS: No deaths have resulted from energy storage facilities in the United States. Battery energy storage facilities are very different from consumer electronics, with secure, highly regulated electric infrastructure that use robust codes and standards to guide and maintain safety.

- E-mobility devices have been lightly regulated in the past, and some products have used poor-quality battery cells and ineffective safety systems.
- They are also charged inside homes, sometimes along egress routes, creating a high level of risk.
- Like EV batteries, ESS battery systems are highly regulated and subject to stringent certification and testing requirements.
- The difference in regulation is evident in vehicle statistics. Worldwide, for the first half of 2023, EV FireSafe cites 500+ light electric vehicle (E-bike and E-scooter) battery fires, but only 44 passenger EV fires⁵.
- Additionally, utility-scale energy storage systems are located within secure facilities with site plans explicitly designed around maximizing safety of those operating the facilities and their neighbors.
- The ESS industry meets with and shares best practices with first responders and communities.
- Lessons learned from earlier ESS incidents have been reflected in the evolution of codes and standards. Often, companies go beyond mandatory testing to test more extreme failure scenarios.
- Altogether, like other electric grid infrastructure, energy storage systems are highly regulated and there are established safety designs, features, and practices proven to eliminate risks to operators, firefighters, and the broader community.
- The industry is committed to meeting these standards, such as NFPA 855, which are regularly updated to reflect the latest evidence-based best practices.



CLAIM: Battery fires emit toxic fumes and pose a risk to the community

FACTS: Past incidents demonstrate that fires are contained within the facility, and air quality in neighboring areas remains at safe levels.

- Laboratory testing of emissions from Li-ion cells in thermal runaway shows that emissions are similar to those found in plastics fires⁶.
- During an ESS battery fire, only trace amounts of chemicals are detected in sampling around the event, and overall air quality remains at safe levels.
- During a fire at a Tesla Megapack at Moss Landing in California, air-quality testing showed no hazards to human health⁷.

CLAIM: Fire suppression systems should be mandatory for all lithium-ion battery systems.

FACTS: Regulations that aren't vetted by organizations like the National Fire Protection Association or are inconsistent with the International Fire Code may make projects less safe.

- Established national and international codes and standards already require BESS to incorporate the appropriate safety features to contain any potential fires or thermal events.
- Successful suppression of a fire does not guarantee that the underlying thermal runaway event has been terminated, so containing a fire is the best way to protect first responders and communities.
- The energy storage industry is working to avoid events such as the explosion at an installation in McMicken, Arizona, in which four firefighters were injured⁸. Prior to this event, the industry was focused on extinguishing fires as quickly as possible, but McMicken showed that explosion can be a greater hazard and fire containment is a better strategy.
- The accepted best practice for the rare ESS fires that do occur is to contain them, managing the burn of the limited affected unit in a controlled manner while protecting nearby structures and equipment. This strategy eliminates any explosion hazard, avoids issues with stranded energy and reignition, and minimizes contaminated runoff of firefighting water.
- Codes and standards are changing to reflect this practice, placing an emphasis on explosion prevention. One proposal for the 2026 edition of NFPA 855, *Standard for the Installation of Stationary Energy Storage Systems*, would forbid installation of traditional clean-agent or aerosol fire suppression systems unless testing demonstrates that use of such systems does not create an explosion risk.

⁵ EV FireSafe, All Electrified Transport LIB Fire Incidents, Global, 1st January to 30th June 2023, <https://www.evfiresafe.com/ev-battery-fire-overview>.

⁶ DNV-GL, *Considerations for ESS Fire Safety*, Report for Consolidated Edison and NYSERDA, 2017.

⁷ Air quality testing showed no hazards to human health amid battery fire in Moss Landing.

⁸ Arizona ESS Explosion Investigation and Line of Duty Injury Reports Now Available.

ATTACHMENT B

Maricopa County Solar (Example Project) Economic Impact and Tax Revenue Analysis



Prepared for:

Arizona Solar Energy Industries Association (AriSEIA)

July 2024

Prepared by:



Elliott D. Pollack & Company
5111 N. Scottsdale Road, Suite 202
Scottsdale, Arizona 85250

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Summary of Impacts

There is a common misconception that solar projects do not contribute to the economy nor generate tax revenues for local governments. However, solar projects across all counties in Arizona are subject to personal property taxes on equipment and, thus, generate significant revenue for local taxing jurisdictions as outlined in this report. In addition, solar projects can contribute to increased real property taxes as well as generate use taxes levied on non-exempt equipment for the State (but these additional State taxes are not included in this analysis).

This report estimates the impacts of a typical solar project to be located in Maricopa County. This example solar power generating facility would sit on an estimated 1,200 acres and produce up to 200 MW of power and includes the addition of 200 MW (4 hours) of battery storage. A facility of this size is generally in range with recent power purchase contracts announced by Arizona Public Service and Salt River Project, two of the state's largest electric utilities.

The taxable original cost of a project of this size is estimated at \$528.0 million. The taxable original cost is subject to personal property tax using a 30-year straight-line depreciation with a 10% floor for solar and 15-year straight-line depreciation with a 10% floor for battery storage. The full cash value of renewable energy equipment is 20% of the depreciated cost of the equipment per ARS 42-14155. This full cash value is subject to Arizona personal property taxes over the life of the project (40 years for the solar facility and 20 years for battery storage).

Impact Summary

During construction, an estimated \$1.6 million in tax revenues and 379 jobs would be created in the local economy from this example project. In addition, over the life of the project, more than \$22.2 million in tax revenue would be generated by personal property tax on equipment. These taxes would directly benefit the county, its special districts (such as county fire, flood and library districts), and local school districts. Furthermore, employees working on the project generate an estimated \$2.5 million in tax revenues.

In total, this example Maricopa County Solar Project would generate an estimated \$26.2 million in tax revenues during the life of the project. The total economic output of the project over the life of the project is estimated at \$349.7 million.

Maricopa County Solar Project Summary Impact

Construction related jobs	379
Taxes generated during construction	\$1.6 million
Personal property tax generated during life of project	
Maricopa County and special districts	\$6.3 million
Local school districts	\$15.9 million
Tax revenues generated by employees	\$2.5 million
Grand total of taxes generated during life of Project	\$26.2 million
Total economic activity during life of project	\$349.7 million



Economic Impact and Tax Revenue Analysis

Economic Impacts

- Development would provide an immediate \$47.6 million in direct construction impact in the County, generating a direct, indirect and induced total of \$81.3 million in total economic impact from construction activity. This investment would create 379 construction and related jobs and \$29.0 million in wages over the projected construction schedule.
- Once operating, an estimated \$6.7 million in annual economic activity would occur within the County's economy each year.
- All totaled, the example solar project would create over \$349.7 million in economic activity within Maricopa County during construction and 40 years of operations for solar and 20 years of operations of the battery storage.

Economic Impact Summary Maricopa County Solar Project (2024 dollars)			
Construction			
Impact Type	Jobs	Wages	Economic Output
Direct	225	\$18,242,000	\$47,600,000
Indirect	50	\$4,040,000	\$12,615,000
Induced	104	\$6,725,000	\$21,074,000
Total	379	\$29,007,000	\$81,289,000
Ongoing Annual Operations			
Impact Type	Annual Jobs	Total Wages	Economic Output
Direct	4	\$448,000	\$3,682,900
Indirect	4	\$424,700	\$1,729,900
Induced	6	\$414,400	\$1,298,600
Total	15	\$1,287,100	\$6,711,400
Total economic output during construction and 40 years of operations:			\$349,745,000
Source: Elliott D. Pollack & Company; IMPLAN			

Tax Revenues Generated

Construction and operations of the solar project would create significant tax revenue for Maricopa County and other entities. While the project would be exempt from prime contracting transaction privilege tax (under ARS 42-5075(b)(7) and ARS 42-5061), there is still substantial value from solar equipment that would increase the personal property revenues for the County. Revenues would also be generated from secondary sources of employee generated revenue.



- Maricopa County would receive an estimated \$1.6 million in cumulative tax revenue from construction related impacts. These impacts are generated by the share of employees that would spend within Maricopa County during the construction phase.

Tax Revenues during Construction Maricopa County Solar Project (2024 dollars)				
	Secondary Revenues			
Impact Type	Employee Spending Sales Tax	Resident Property Tax	State Shared Revenues	Total Revenues
Direct	\$87,300	\$824,400	\$41,810	\$953,510
Indirect	\$19,300	\$182,400	\$9,260	\$210,960
Induced	\$35,700	\$380,100	\$18,700	\$434,500
Total	\$142,300	\$1,386,900	\$69,800	\$1,599,000
<u>1/</u> The figures are intended only as a general guideline as to how the taxing jurisdictions could be impacted by the project. The above figures are based on the current economic structure and tax rates of the State of Arizona, county and other taxing jurisdictions. Source: EDPCo; IMPLAN; ADOR; ATRA				

Operations of the example solar project would create tax revenue for the County and local school districts.

- Maricopa County property taxes include taxing jurisdictions such as Maricopa County the fire district assistant tax, county flood and library, community college district and the special health district. These jurisdictions would receive an average of \$157,000 per year in personal property taxes. The school districts would receive an average of \$396,500 in tax revenue each year.
- Average annual taxes generated for the County from employees total an estimated \$61,800 each year.

In total, the combined annual taxes generated for the County average an estimated \$615,300 each year.



Average Annual Tax Revenues Maricopa County Solar Project (2024 dollars)	
Average Annual Operating Taxes Generated	
Personal property tax	
County and Special Districts	\$157,000
Local School Districts (weighted average)	\$396,500
Tax revenues generated by employees	\$61,800
Total Operations Related Revenue	\$615,300
1/ The figures are intended only as a general guideline as to how the county could be impacted by the project. The above figures are based on the current economic structure and tax rates of the State of Arizona and county. Source: Elliott D. Pollack & Co.; IMPLAN; AZDOR; AriSEA; ATRA	

- Over the life of the project, the County and its school districts would receive an estimated \$26.2 million in total from construction and ongoing annual tax collections generated by the Maricopa Solar Project.
- If the site is located within an incorporated area, the property taxes for that area would be collected in addition to the County and School Districts. That is, if the site is located within Goodyear incorporated area, for example, an additional \$3.6 million would be collected in personal property taxes. The following table also provides the projected taxes for each of those jurisdictions.



Tax Revenues: Life of Project Maricopa County Solar Project (2024 dollars)	
Construction related tax revenues	\$1,599,000
Operations Impact	
Personal property tax	
County and Special Districts	\$6,280,200
Local School Districts (weighted average)	\$15,859,200
Tax revenues generated by employees	\$2,472,000
GRAND TOTAL FISCAL IMPACT	\$26,210,400
Personal property tax for incorporated areas*	
Avondale	\$3,036,000
Buckeye	\$3,439,000
Chandler	\$3,017,000
El Mirage	\$3,686,000
Gila Bend	\$1,298,000
Gilbert	\$2,041,000
Glendale	\$3,255,000
Goodyear	\$3,614,000
Mesa	\$5,104,000
Peoria	\$2,999,000
Phoenix	\$4,372,000
Queen Creek	\$3,589,000
Scottsdale	\$2,044,000
Surprise	\$1,581,000
Tempe	\$5,012,000
Tolleson	\$5,503,000
*Collected if the site is located within the respective incorporated area.	
1/ The figures are based on a 40-year life and intended as a general guideline as to how the local governments could be impacted by the project. The above figures are based on the current economic structure and tax rates of the State of Arizona and other taxing jurisdictions.	
Source: Elliott D. Pollack & Co.; AriSEA; IMPLAN	

About Elliott D. Pollack & Company

Elliott D. Pollack & Company has been in business for more than 30 years and is headed by one of Arizona's most noted economists. The firm is known for its expertise in two primary areas – real estate and economics, with its primary practice in the State of Arizona. The firm has been employed by public institutions, state, county, and local governments, private entities, and Native American Communities, in a variety of assignments that include economic impact analyses, real estate market studies, forecasting, and public speaking at events around the State.



Assumptions & Methodology

The typical 1,200-acre solar power generating facility would produce up to 200 MW of power and includes the addition of 200 MW (4 hours) of battery storage. The total value of the example project is estimated at \$528.0 million including construction and equipment. A facility of this size is generally in range with recent power purchase contracts announced by Arizona Public Service and Salt River Project, two of the state's largest electric utilities.

Project Assumptions Maricopa County Solar Project (2024 dollars)	
Acres	1,200
Solar Facility (MW)	200
Battery Storage - 4 hours (MW)	200
<u>Taxable Original Cost of Equipment*</u>	
Solar Equipment	\$207,000,000
Battery Storage Equipment	\$321,000,000
Total value of project	\$528,000,000
*Taxable Original Cost is subject to personal property tax per the ADOR	
Source: AriSEA; Elliott D. Pollack & Company	

The following table outlines the weighted average tax rates used in estimating the property tax impacts of the example Maricopa County Solar Project. These rates are applied to every \$100 of net assessed value. The rates are current as of this report and are used for the entire duration of the projected project life.

Average Property Tax Rates Maricopa County Solar Project	
DISTRICT	RATE
Maricopa County	1.204
CAWCD	0.140
Fire District Assistance Tax	0.008
County Flood	0.154
County Library	0.049
Community College	1.139
County Special Health	0.272
EVIT	0.050
Local School Districts	7.614
Grand Total	10.630
Source: County Assessor's Office	



Additional taxes are applied if the property is located within an incorporated area. Following are municipal rates throughout Maricopa County. These rates are current as of 2024.

Municipal Property Tax Rates Maricopa County Solar Project	
City	RATE
Avondale	1.4579
Buckeye	1.6513
Chandler	1.4484
El Mirage	1.7699
Gila Bend	0.6232
Gilbert	0.9800
Glendale	1.5626
Goodyear	1.7350
Mesa	2.4508
Peoria	1.4400
Phoenix	2.0992
Queen Creek	1.7231
Scottsdale	0.9814
Surprise	0.7591
Tempe	2.4065
Tolleson	2.6421

Source: County Assessor's Office

Economic Impact Methodology

Economic impact analysis examines the economic implications of an activity in terms of output, earnings, and employment. For this study, the analysis focused on the construction impacts as well as the ongoing operations including direct expenditures by the residents.

The different types of economic impacts are known as direct, indirect, and induced, according to the manner in which the impacts are generated. For instance, direct employment consists of permanent jobs held by project employees. Indirect employment is those jobs created by businesses that provide goods and services essential to the operation or construction of the project. These businesses range from manufacturers (who make goods) to wholesalers (who deliver goods) to janitorial firms (who clean the buildings). Finally, the spending of the wages and salaries of direct and indirect employees on items such as food, housing, transportation and medical services creates induced employment in all sectors of the economy, throughout the region. These secondary effects are captured in the analysis conducted in this study.



Multipliers have been developed to estimate the indirect and induced impacts of various direct economic activities. IMPLAN developed the multipliers used in this study and were selected based on the land use type. The multipliers used for this project represent the construction of power and communication as well as electric power generation for ongoing operations.

The construction multipliers specific to Maricopa County are used in this study. For the solar generation multiplier, an average of similar economies was used, as the current multiplier set for Maricopa County does not exist.

The economic impact is categorized into three types of impacts:

- (1) **Employment Impact** – the total wage and salary and self-employed jobs in a region. Jobs include both part time and full-time workers.
- (2) **Earnings Impact** – the personal income, earnings or wages, of the direct, indirect and induced employees. Earnings include total wage and salary payments as well as benefits of health and life insurance, retirement payments and any other non-cash compensation.
- (3) **Economic Output** – also referred to economic activity, relates to the gross receipts for goods or services generated by the company's operations.

Economic impacts are by their nature regional in character. Such impacts are best illustrated when not assigned to a specific municipality or locality, although clearly the primary impact of job creation would be in the municipality and county where the project is located. Indeed, many communities in the surrounding region would also benefit from the operations of the project.

Fiscal Impact Methodology

Fiscal impact analysis studies the public revenues associated with a particular economic activity. The primary revenue sources of local, county, and state governments (i.e., taxes) are analyzed to determine how an activity may affect the various jurisdictions. This section would evaluate the impact of the project on State, county and local school districts.

The fiscal impact figures cited in this report have been generated from information provided by a variety of sources including the U.S. Bureau of the Census; the U.S. Department of Labor; the Internal Revenue Service; the State of Arizona; the Arizona Tax Research Association; and the U.S. Consumer Expenditure Survey. Elliott D. Pollack & Company has relied upon the estimates of operating revenues outlined in this study.



Fiscal impacts are categorized by type in this study, similar to economic impact analysis. The major sources of revenue generation for governmental entities are calculated based on ongoing operations. Employees would spend part of their salaries on local goods and services and pay taxes on the homes they occupy. This spending would contribute to revenues collected by the State that are ultimately shared with local governments.

The project would be exempt from prime contracting transaction privilege tax (under ARS 42-5075(b)(7) and ARS 42-5061). However, there is still substantial value from solar equipment that would increase the personal property revenues for the County. Revenues would also be generated from secondary sources of employee generated revenue. The following is a description of the applicable revenue sources that would be considered for this analysis.

Primary Taxes Generated by Project

- Personal Property Tax

Renewable energy projects are centrally assessed by the Arizona Department of Revenue. The total original cost is used to calculate the full cash value. The depreciation schedule is then based on straight-line depreciation over the useful life (currently 30 years capped at 90% of taxable original cost per ARS 42-14155). The full cash value factor for renewable energy is 20% and the assessment ratio of 15% is applied for a total taxable value each year.

Secondary Taxes Generated by Employees

The following tax rates are applied to the spending of direct, indirect and induced employees.

- Transaction Privilege Tax

The State, counties, and local cities in Arizona charge sales tax on retail goods and utility usage. The sales tax rate for the State is 5.6%. Portions of this tax are redistributed through revenue sharing to counties and cities throughout Arizona based on population. The weighted average tax rate for local governments is 2.16%. Based on data from the U.S. Consumer Expenditure Survey, the projected extent of retail spending and resulting sales tax receipts was calculated.

- Property Tax

Given that the location of the example project is unknown, the value of the land was not estimated and, thus, real property taxes for the land are not calculated in this report. However, the employees would be subject to residential property tax in Arizona with an assessment ratio of 10%. In order to estimate property taxes, the assessed full cash value of the occupied space along with the projected value of a typical housing unit has been calculated.



- State Shared Revenues

Each municipality in Arizona receives a portion of State revenues from four different sources - State sales tax (see description above), State income tax, vehicle license tax and highway user tax. The formulas for allocating these revenues are primarily based on population. Counties also share in the revenue sources of the State, with the exception of income tax.

State Income Tax

The State of Arizona collects taxes on personal income. The tax rate used in the analysis averages about 1.6% for earnings. These percentages are based on the most recently available income tax data from the State and the projected wage levels of jobs created by the construction and operations impact. This tax is applied to the wages and earnings of direct and indirect employment. Portions of this tax are redistributed through revenue sharing to cities throughout Arizona based on population.

HURF Taxes

The State of Arizona collects specific taxes for the Highway User Revenue Fund (HURF). Both the registration fees and the motor vehicle fuel tax (gas tax) are considered in this analysis. The motor vehicle fuel tax is \$0.18 per gallon and is calculated based on a vehicle traveling the Arizona statewide average of 12,000 miles per year at 16.6 miles per gallon. Registration fees average \$65 per employee in the State of Arizona. These factors are applied to the projected direct and indirect employee count. Portions of these taxes are distributed to cities and counties throughout Arizona based on a formula that includes population and the origin of gasoline sales.

Vehicle License Tax

The vehicle license tax is a personal property tax placed on vehicles at the time of annual registration. This factor is applied to the projected direct, indirect and induced employee count. The average tax used in this analysis is \$343 and portions of the total collections are distributed to the Highway User Revenue Fund. The remaining funds are shared between cities and counties in accordance with population-based formulas.

The above tax categories represent the largest sources of revenues that would be generated to the various jurisdictions. The revenue impacts do not include certain revenue sources such as corporate income taxes. All tax collections represented in this analysis are gross collections and do not take into consideration any incentives or development agreements that may occur.



APPENDIX 1: Annual Personal Property Tax Estimates by Jurisdiction

Personal Property Tax Impact from Operations Maricopa County Solar Project (2024 dollars)														
	Construction	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
Total taxable value	\$15,840,000	\$14,991,000	\$14,142,000	\$13,293,000	\$12,444,000	\$11,515,800	\$10,614,600	\$9,710,400	\$8,906,200	\$8,144,000	\$7,170,000	\$6,193,000	\$5,116,000	\$4,140,000
Maricopa County	\$190,777	\$180,552	\$170,326	\$160,101	\$149,876	\$149,652	\$138,732	\$127,842	\$116,952	\$106,062	\$110,130	\$96,243	\$86,355	\$74,468
CAWCD	\$22,176	\$20,987	\$19,799	\$18,610	\$17,422	\$16,234	\$15,046	\$13,858	\$12,670	\$11,482	\$12,290	\$11,098	\$9,906	\$8,714
Fire District Assistance Tax	\$1,283	\$1,214	\$1,146	\$1,077	\$1,008	\$933	\$860	\$787	\$713	\$640	\$741	\$661	\$581	\$501
County Flood	\$24,340	\$23,026	\$21,722	\$20,418	\$19,114	\$17,809	\$16,504	\$15,200	\$13,895	\$12,590	\$14,045	\$12,529	\$11,013	\$9,497
County Library	\$7,730	\$7,316	\$6,901	\$6,487	\$6,073	\$5,659	\$5,245	\$4,831	\$4,417	\$4,003	\$4,587	\$3,981	\$3,499	\$3,017
Community College	\$180,366	\$170,718	\$161,049	\$151,381	\$141,712	\$131,176	\$120,879	\$110,582	\$100,285	\$90,132	\$104,132	\$92,882	\$81,652	\$70,412
County Special Health	\$43,021	\$40,716	\$38,410	\$36,104	\$33,798	\$31,492	\$29,186	\$26,880	\$24,574	\$22,268	\$24,835	\$22,154	\$19,474	\$16,793
EVT	\$7,820	\$7,496	\$7,171	\$6,847	\$6,522	\$6,197	\$5,872	\$5,547	\$5,222	\$4,897	\$5,472	\$4,879	\$4,355	\$3,831
Maricopa County	\$477,624	\$452,024	\$426,424	\$400,824	\$375,224	\$349,624	\$324,024	\$298,424	\$272,824	\$247,224	\$275,219	\$245,958	\$216,197	\$186,436
Local School Districts	\$1,206,134	\$1,141,487	\$1,076,840	\$1,012,193	\$947,546	\$882,899	\$818,252	\$753,605	\$688,958	\$624,311	\$670,546	\$606,268	\$541,990	\$477,285
School Districts	\$1,206,134	\$1,141,487	\$1,076,840	\$1,012,193	\$947,546	\$882,899	\$818,252	\$753,605	\$688,958	\$624,311	\$670,546	\$606,268	\$541,990	\$477,285
Grand Total	\$1,683,957	\$1,593,510	\$1,503,264	\$1,413,017	\$1,322,770	\$1,232,523	\$1,142,276	\$1,052,029	\$961,782	\$871,535	\$945,765	\$860,226	\$774,187	\$688,721
Total taxable value	\$5,517,000	\$6,414,000	\$5,986,000	\$5,558,000	\$5,130,000	\$4,702,000	\$4,274,000	\$3,846,000	\$3,418,000	\$2,990,000	\$2,562,000	\$2,134,000	\$1,706,000	\$1,278,000
Maricopa County	\$66,447	\$77,250	\$88,053	\$98,856	\$109,659	\$120,462	\$131,265	\$142,068	\$152,871	\$163,674	\$174,477	\$185,280	\$196,083	\$206,886
CAWCD	\$7,724	\$8,980	\$10,236	\$11,492	\$12,748	\$14,004	\$15,260	\$16,516	\$17,772	\$19,028	\$20,284	\$21,540	\$22,796	\$24,052
Fire District Assistance Tax	\$447	\$520	\$593	\$666	\$739	\$812	\$885	\$958	\$1,031	\$1,104	\$1,177	\$1,250	\$1,323	\$1,396
County Flood	\$8,474	\$9,852	\$11,230	\$12,608	\$13,986	\$15,364	\$16,742	\$18,120	\$19,498	\$20,876	\$22,254	\$23,632	\$25,010	\$26,388
County Library	\$2,692	\$3,130	\$3,568	\$4,006	\$4,444	\$4,882	\$5,320	\$5,758	\$6,196	\$6,634	\$7,072	\$7,510	\$7,948	\$8,386
Community College	\$62,828	\$58,171	\$53,514	\$48,857	\$44,200	\$39,543	\$34,886	\$30,229	\$25,572	\$20,915	\$26,258	\$21,601	\$16,944	\$12,287
County Special Health	\$14,984	\$17,420	\$20,856	\$24,292	\$27,728	\$31,164	\$34,600	\$38,036	\$41,472	\$44,908	\$48,344	\$51,780	\$55,216	\$58,652
EVT	\$2,758	\$3,207	\$3,656	\$4,105	\$4,554	\$5,003	\$5,452	\$5,901	\$6,350	\$6,799	\$7,248	\$7,697	\$8,146	\$8,595
Maricopa County	\$166,354	\$193,401	\$220,448	\$247,495	\$274,542	\$301,589	\$328,636	\$355,683	\$382,730	\$409,777	\$436,824	\$463,871	\$490,918	\$517,965
Local School Districts	\$420,091	\$488,933	\$557,775	\$626,617	\$695,459	\$764,301	\$833,143	\$901,985	\$970,827	\$1,039,669	\$1,108,511	\$1,177,353	\$1,246,195	\$1,315,037
School Districts	\$420,091	\$488,933	\$557,775	\$626,617	\$695,459	\$764,301	\$833,143	\$901,985	\$970,827	\$1,039,669	\$1,108,511	\$1,177,353	\$1,246,195	\$1,315,037
Grand Total	\$586,445	\$682,334	\$778,223	\$874,112	\$970,001	\$1,065,890	\$1,161,779	\$1,257,668	\$1,353,557	\$1,449,446	\$1,545,335	\$1,641,224	\$1,737,113	\$1,833,002
Total taxable value	\$621,000	\$621,000	\$621,000	\$621,000	\$621,000	\$621,000	\$621,000	\$621,000	\$621,000	\$621,000	\$621,000	\$621,000	\$621,000	\$621,000
Maricopa County	\$7,479	\$7,479	\$7,479	\$7,479	\$7,479	\$7,479	\$7,479	\$7,479	\$7,479	\$7,479	\$7,479	\$7,479	\$7,479	\$7,479
CAWCD	\$869	\$869	\$869	\$869	\$869	\$869	\$869	\$869	\$869	\$869	\$869	\$869	\$869	\$869
Fire District Assistance Tax	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50
County Flood	\$954	\$954	\$954	\$954	\$954	\$954	\$954	\$954	\$954	\$954	\$954	\$954	\$954	\$954
County Library	\$303	\$303	\$303	\$303	\$303	\$303	\$303	\$303	\$303	\$303	\$303	\$303	\$303	\$303
Community College	\$7,072	\$7,072	\$7,072	\$7,072	\$7,072	\$7,072	\$7,072	\$7,072	\$7,072	\$7,072	\$7,072	\$7,072	\$7,072	\$7,072
County Special Health	\$1,687	\$1,687	\$1,687	\$1,687	\$1,687	\$1,687	\$1,687	\$1,687	\$1,687	\$1,687	\$1,687	\$1,687	\$1,687	\$1,687
EVT	\$311	\$311	\$311	\$311	\$311	\$311	\$311	\$311	\$311	\$311	\$311	\$311	\$311	\$311
Maricopa County	\$18,725	\$18,725	\$18,725	\$18,725	\$18,725	\$18,725	\$18,725	\$18,725	\$18,725	\$18,725	\$18,725	\$18,725	\$18,725	\$18,725
Local School Districts	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286
School Districts	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286	\$47,286
Grand Total	\$66,011	\$66,011	\$66,011	\$66,011	\$66,011	\$66,011	\$66,011	\$66,011	\$66,011	\$66,011	\$66,011	\$66,011	\$66,011	\$66,011

NOTES

1. Depreciation used to value "nonwearing energy equipment" is based on "straight-line depreciation over the useful life, as adopted by the department," per ADS 42-14155.

2. Depreciation used to value "wearing energy equipment" is based on "straight-line depreciation over the useful life, as adopted by the department," per ADS 42-14155.

3. Through 12/31/40 the full cash value of "nonwearing energy equipment" is 20% of the depreciated cost of the equipment per ADS 42-14155. This report assumes the statute will be extended to cover the life of the project.

4. The total may not equal the sum of the impacts due to rounding. All dollar figures are in constant dollars. Initiation per ADS 42-14155. This report assumes the statute will be extended to cover the life of the project.

5. The figures for the County as a whole are based on the current tax rates and assume the Project would not impact these rates.

6. The forecasts are subject to uncertainty and variation. Accordingly, we do not represent them as results that will be achieved. Changes in rates would alter the findings of this analysis.

Source: Elitard D. Pollock & Company, LLP/ADP, Arizona Department of Revenue, Arizona Tax Research Association, ARSEA

NOTES

1. Depreciation used to value "renewable energy equipment" is based on "straight-line depreciation over the useful life, as adopted by the department," per ARS 42-1415.
2. Depreciation use a 30 year straight line depreciation for solar and 15 year for battery storage in this analysis as advised by the Arizona Department of Revenue.
3. Through 12/31/40 the full cost value of "renewable energy equipment" is 20% of the depreciated cost of the equipment per ARS 42-1415. This report assumes the statute will be extended to cover the life of the project.
4. The total may not equal the sum of the impacts due to rounding. All dollar figures are in constant dollars. Inflation has not been included in these figures.
5. The figures for the County as a whole are based on the current tax rates and assume the Project would not impact these rates.
6. The forecasts are subject to uncertainty and variation. Accordingly, we do not represent them as results that will be achieved. Changes in rates would alter the findings of this analysis.

Source: Elliott D. Pollack & Company; IMHPLN; Arizona Department of Revenue; Arizona Tax Research Association; ARSEA



ATTACHMENT C

Arizona Water Demand Analysis by Land Use Category

Prepared for

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Executive Summary

This report provides an analysis of water consumption of various land uses in Arizona, offering insight into how land use decisions impact water resource commitments in the arid Southwest. Understanding these differences is crucial for decision making in areas facing water scarcity and where efficient resource allocation is essential. The objectives of this analysis were to develop proxy water use estimates for land use types that might be considered alternative to the development of solar projects in Arizona, to highlight the differences in the water demands of each land use type and by power generation facility type, and to clarify the disparities in water demand to enable decision-makers to promote efficient water use and sustainable land development across the region.

In particular, this report summarizes the water demands of various land use categories in Arizona in comparison to the relatively low water demands of solar projects. Alternative land uses including irrigated agriculture, subdivision development, industrial, and commercial are found to consistently require larger volumes of water than solar. From a water conservation perspective, solar is a preferred land use in the arid Southwest because of its modest water footprint. To demonstrate the benefits of solar, this analysis quantifies the water demands of alternative land uses based on data from Arizona Department of Water Resources (ADWR or “the Department”) and other publicly available sources.

The results of the analysis clearly demonstrate that water use by solar facilities is significantly lower than that of potential alternative land uses in Arizona. Average water use across all sectors analyzed in this effort is 3.4 acre-feet¹ per acre (AF/acre), which is 100 times the use of solar (0.03 AF/acre). In particular, data centers were found to use 6.3 AF/acre on average, which is 200 times the amount used by solar. Metro Phoenix is the second-largest data center market in the nation in large part because of the availability of power and land². In conclusion, compared to other land use categories evaluated, water use by solar is negligible. When compared to water requirements of natural gas and nuclear power generation facilities, these power sources require 25-100 times the water requirements of solar facilities to produce one megawatt (MW) (4.3 AF/MW for natural gas and 18.7 AF/MW for nuclear compared to 0.16 AF/MW for solar).

¹ One acre-foot equals 325,851 gallons.

² H2 2023 North American Data Center Report. August 27, 2024. JLL. https://www.us.jll.com/en/trends-and-insights/research/na-data-center-report?utm_source=public-relations&utm_medium=ol&utm_campaign=am-us-industries-data-centers-outlook&utm_content=byline

Appendix A of this report summarizes the data and methodology to estimate water demands of the various sectors analyzed and details the findings of the data analysis.

Summary of Findings

Water use in Arizona is categorized under three main sectors: municipal, industrial, and agricultural. According to ADWR, 74%³ of the state's total annual water use is irrigated agriculture followed by municipal use at 20%⁴. Industrial water use accounts for only 6% of the state's total water use. Industrial use of land across Arizona is also minimal relative to other uses. In Maricopa and Pinal counties, industrial uses account for only 0.47% of total land use⁵. Solar generation projects are a type of industrial use that require a minimal volume of water⁶. Such low water requirements may be a reason there is no ADWR conservation program for solar facilities, programs that seek to regulate water use for a variety of facilities and water use types⁷. This analysis provides context on solar water use as compared to other water uses in Arizona.

WestWater compiled sector-level water use data reported to ADWR and from other sources within the state's Active Management Areas (AMAs) to develop and analyze proxy water demand estimates of annual average water use by relevant alternative land uses. Alternative land uses include agriculture, residential (subdivisions), manufacturing, data centers, and industrial uses. Industrial uses include large turf facilities, primarily golf courses, dairy operations, cattle feedlot operations, and power generation facilities.

Estimated water use for each sector by acre and MW (as applicable) is summarized in **Table 1**. The highest estimated water use across all AMAs during the 2019-2023 analysis period was attributed to data centers at 6.3 AF/acre, followed by turf and agricultural irrigation at 4.1 AF/acre, and manufacturing at 3.6 AF/acre. Natural gas and nuclear power facilities, for which water use data were reported to ADWR, require 4.3 AF/MW and 18.7 AF/MW, respectively. Solar facility water use is extremely low in terms of both a per acre and per MW

³ Agriculture, Conservation. Arizona Department of Water Resources <https://www.azwater.gov/conservation/agriculture#:~:text=Irrigated%20agriculture%20is%20the%20largest,of%20the%20available%20water%20supply>

⁴ Conservation. Arizona Department of Water Resources. <https://www.azwater.gov/conservation/public-resources#:~:text=About%2020%20percent%20of%20the,most%20of%20this%20is%20residential.>

⁵ Land Use Explorer (2022). Maricopa Association of Governments. <https://geo.azmag.gov/maps/landuse/>

⁶ Water Impacts of High Solar PV Electricity Penetration. National Renewable Energy Laboratory. September 2015.

⁷ Active Management Areas Management Plans (2023) <https://www.azwater.gov/ama/ama-management-plans>

comparison. Solar water use is estimated to be 0.03 AF/acre and 0.16 AF/MW. **Figure 1** and **Figure 2** provide additional summaries of water use from this analysis.

Table 1: Summary of Water Use in Arizona by Sector

<u>Sector</u>	<u>Average Use</u>
<i>AF/acre</i>	
Solar	0.03
Feedlots	1.4
Dairy	2.2
Subdivisions	2.3
Manufacturing	3.6
Irrigation	4.1
Golf Course	4.1
Data Centers	6.3
<i>AF/MW</i>	
Solar	0.16
Power (Natural Gas)	4.3
Power (Nuclear)	18.7

Figure 1: Arizona Water Use per Acre by Facility Type

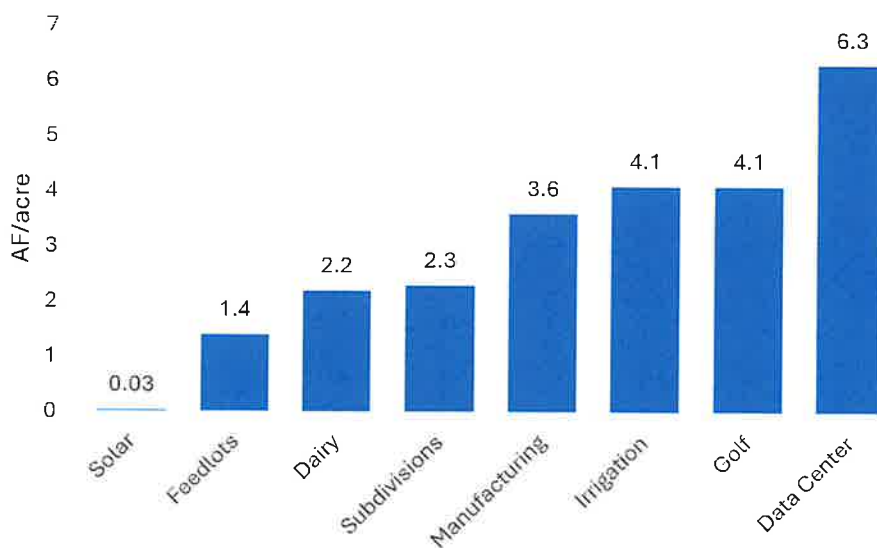
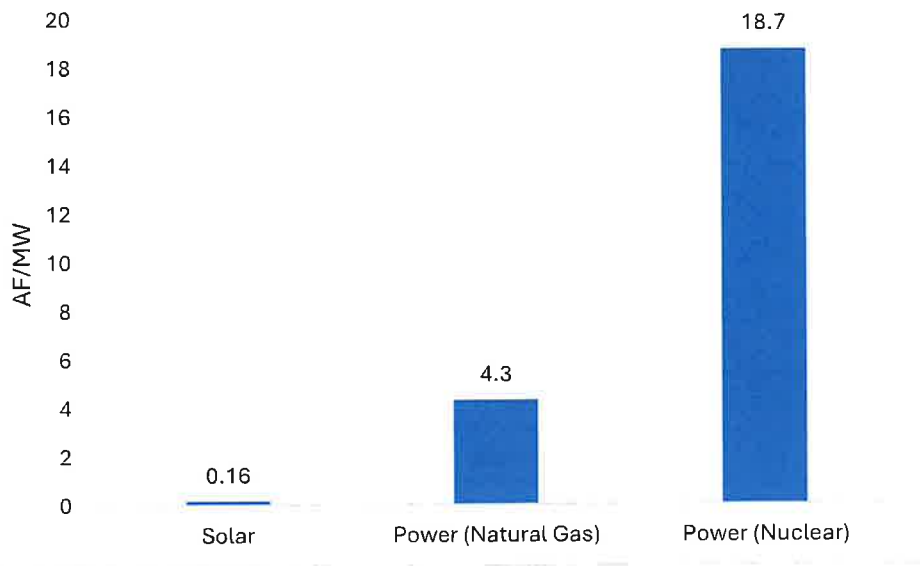


Figure 2: Arizona Water Use per MW – Solar, Natural Gas, and Nuclear

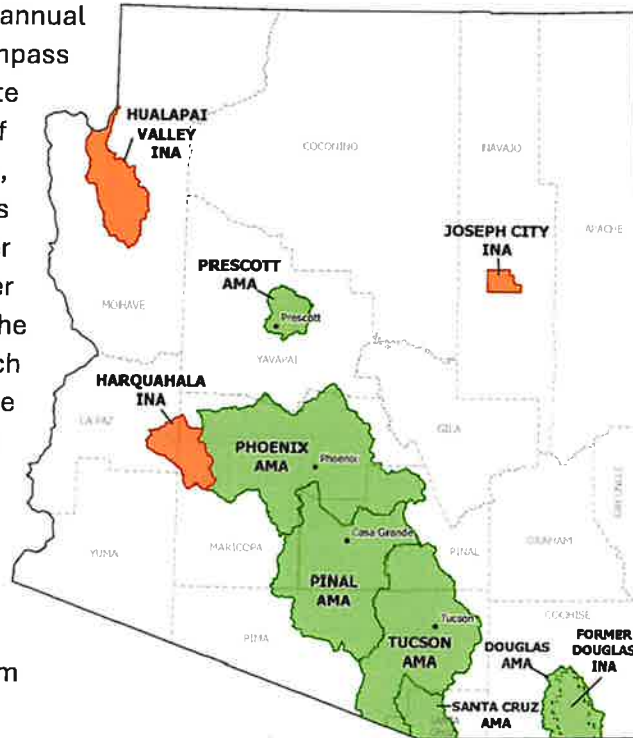


Conclusions

The results of this analysis clearly demonstrate that water use by solar facilities is significantly lower than that of potential alternative land uses. In fact, solar water use is virtually zero, which cannot be said of any other alternative land use. Other land uses utilized water at significantly higher rates than solar facilities. Average water use across the sectors analyzed for this effort is 3.4 AF/acre, which is 100 times the use of solar facilities (0.03 AF/acre). In particular, data centers were found to use 6.3 AF/acre on average, which is 200 times the amount used by solar. Nuclear power was found to use 18.7 AF/MW, which is 100 times the amount used by solar (0.16 AF/MW). As compared to the other water use estimates, solar facility water use is negligible.

Appendix A: Data and Methodology

This analysis primarily utilizes AMA annual report data from ADWR. AMAs encompass the most populated areas of the state and account for approximately 80% of statewide water use⁸. Within the AMAs, water use exceeding a certain volume is highly regulated and therefore water may only be utilized pursuant to a water right. For these reasons, AMAs are the only areas of the state for which comprehensive, up-to-date water use data are available. In addition, the management plans detail several mandatory conservation programs for various water use types. Water users within AMAs are required to annually report the water use, and facilities that fall into a required conservation program must report supplemental use information.



ADWR data include total use by irrigation rights and various industrial subsectors including golf courses, feedlots, dairy, and power. Supplemental data were also provided including, as applicable, associated irrigation acres, acres of landscaped area, number of animals, volume of product produced, and amount of power generated. Although ADWR data are only available for the AMAs, as it is the most robust water use dataset within Arizona, these values are used as a proxy for other water use in the same sectors in Arizona.

In addition, data from the Central Arizona Groundwater Replenishment District (CAGRDR) and Census Bureau (CB) were used to develop water use estimates for subdivisions⁹. This included 2018-2022 CAGRDR data on the number of new CAGRDR member land lots and their projected water demand. Lot size data from the CB Survey of Construction in 2021 were also used¹⁰. In addition to these sources, this analysis also utilized the ADWR Supply and Demand

⁸ Arizona Department of Water Resources, "Active Management Areas," Fact Sheet, (March 2016).

⁹ CAGRDR Reports and Information (2011-2022). Central Arizona Groundwater Replenishment District. <https://cagrd.com/operations/cagrd-reports-and-information/>

¹⁰ Characteristics of New Housing (2021). United States Census Bureau. <https://www.census.gov/construction/chars/sold.html>

Assessments methods appendix ¹¹ to develop water use sector demand estimates. Governmental reports and other publicly available information were referenced to develop manufacturing and data center water demands.

WestWater developed estimates of annual water use for the following sectors and subsectors: Irrigation, Golf Course, Feedlots, Dairy, Subdivisions, Manufacturing, Data Center, and Power. Solar water use can be captured in two ways: 1) volume by acre and 2) volume per amount of power produced. To develop water use estimates that are comparable to solar use, WestWater used two common units. For water use that is associated with the size of the land, water estimates are developed per acre. For the power sector, water use is not directly related to the size of the land where the facility is sited. Instead, the volume of water is expressed as AF/MW.

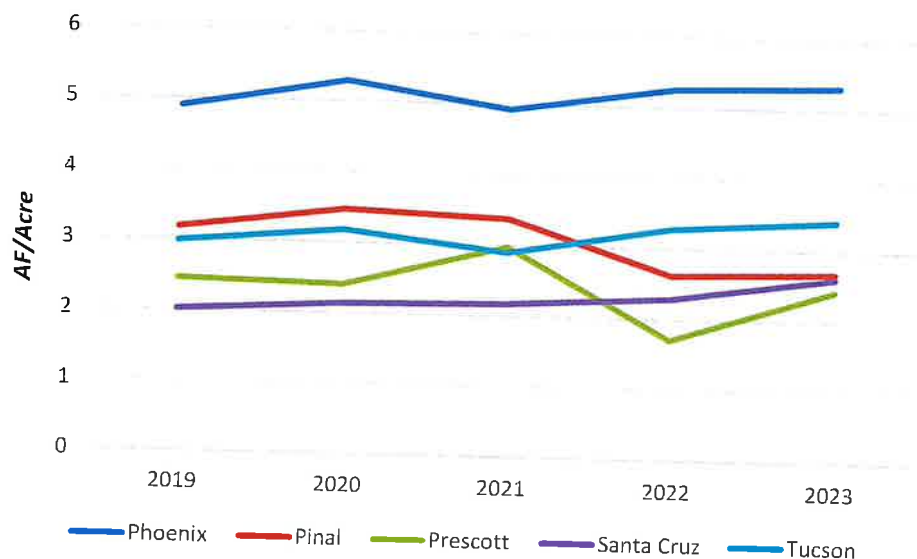
Irrigation

To develop estimates for irrigation water, ADWR annual report data were filtered to irrigation rights or rights that fall under the base or best management plans' conservation programs. Once the data were filtered, the total reported annual use in AF was divided by the number of acres associated with each right. Although some annual reports include irrigated acres, it is not required by the Department. As a result, this estimate does not necessarily represent water use per irrigated acre, although it may be representative of agricultural land.

Irrigation water use varies by AMA as summarized in **Figure 3**. The Phoenix AMA had the highest water use, averaging 5.1 AF/acre over the 5 years of reported data. The Santa Cruz and Prescott AMAs had the lowest use, with an average of 2.3 AF/acre and 2.4 AF/acre respectively. Overall, the average irrigation use across all years and AMAs was **4.1 AF/acre**.

¹¹ Supply and Demand Methods Appendix (2023). Arizona Department of Water Resources.
https://www.azwater.gov/sites/default/files/2023-12/2023_MethodsAppendix_1.pdf

Figure 3: Irrigation Average Water Use by AMA, 2019-2023 (AF/Acre)

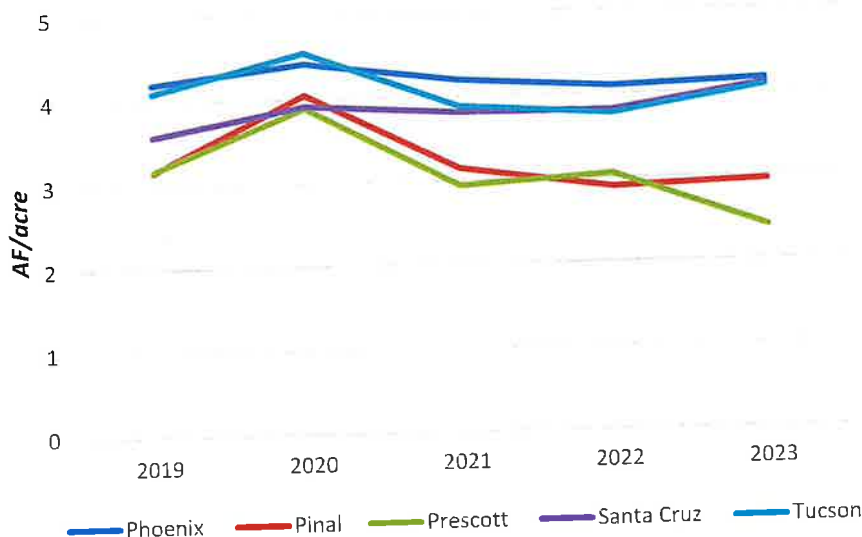


Golf Course

The industrial water use sector consists of various turf subsectors including golf. Turf related facilities are required to report up-to-date data on the number of turfed, low water use, and water surface acres present. These acres were summed to determine total acreage for golf. The total reported annual water use was then divided by the total number of acres for golf for an AF/acre estimate by facility.

Water use by golf courses is typically related to the amount of high intensity water use (turf and water features) and the efficiency of irrigation infrastructure. The 5-year average water use for golf courses ranges from 3.2 AF/acre to 4.2 AF/acre across the AMAs. Overall, golf course water use averages **4.1 AF/acre**. Golf water use is lower on courses in the Prescott AMA, where precipitation tends to be higher. Water use by turf for golf courses is summarized in Figure 4.

Figure 4: Golf Course Water Use by AMA, 2019-2023 (AF/Acre)



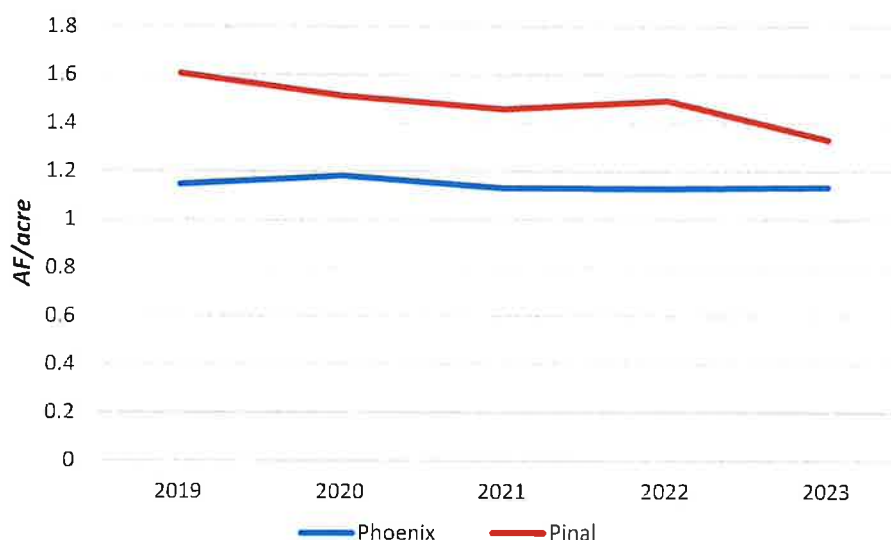
Feedlots/Dairy

ADWR annual reports for feedlots include data on the number of animals at each facility by month. These data were summed to develop an annual number of animals per facility. The total reported water use was then divided by the number of animals at each facility for an AF/animal estimate. Feedlot designs include one acre of land per 100 heads of cattle, which includes space for pens, alleys and feed roads¹². To determine a per-acre estimate for feedlots, the volume of AF per animal was multiplied by the number of animals per acre. ADWR data for feedlots were reported in the Phoenix and Pinal AMAs.

Feedlots use slightly more water in the Pinal AMA and average 1.5 AF/Acre, as compared to 1.1 AF/acre in the Phoenix AMA, as summarized in **Figure 5**. Across all facilities and all years, the average feedlot use is **1.4 AF/acre**.

¹² Planning and Designing Cattle Feedlots (2021). Kansas State University Agricultural Experiment Station and Cooperative Extension Service. https://bookstore.ksre.ksu.edu/download/planning-and-designing-cattle-feedlots_MF2316

Figure 5: Feedlot Average Water Use, 2019-2023 (AF/Acre)



Dairy use was estimated based on ADWR's Supply and Demand Assessments (SDA) methods. The ADWR SDA estimates a range of water use per type of cow, including water use for consumption, dust suppression, and other facility uses. The estimates range from 0.02 to 0.04 AF/animal/year, with lower water use representing calves and the highest water use reflecting use by lactating cows. The average water use among all animal types was 0.03 AF/animal/year. Dairy facilities require one acre per 75 heads of cattle¹³. Using the ADWR SDA method and assuming 75 animals per acre results in an estimated water use of **2.2 AF/acre**.

Subdivisions

CAGR Annual Operations Reports from 2018-2022 were used as the basis for developing subdivision water use estimates. These reports include estimates of projected annual demand for new member lands, including the number of new subdivisions and lots by region (East Phoenix, West Phoenix, Pinal, and Tucson). The number of lots per subdivision varies widely and was not used to develop a per acre estimate. Average lot size is also variable, however, data from the CAGR and CB were used to estimate average lot sizes in Arizona. CAGR estimates average lot sizes of approximately 9,000 square feet (sq ft) and 12,000 sq ft in the Phoenix and Tucson areas respectively¹⁴. The CB conducts a Survey of Construction,

¹³ Relocation And Expansion Planning for Dairy Producers (1999). Kansas State University Agricultural Experiment Station and Cooperative Extension Service. <https://krex.k-state.edu/server/api/core/bitstreams/dd52978b-e561-41c5-95a4-19ab46eb0c63/content>

¹⁴ Central Arizona Groundwater Replenishment District Membership Water Demand Analysis (2020), Water Resource Consulting, Contract No. C85195

which includes data on lot size for new builds across several regions¹⁵. In the West region, new builds averaged approximately 10,000 sq ft. Given the range of average lot sizes, this analysis used a range of 9,000 to 12,000 sq ft. The annual water use per lot was divided by the average acres per lot to develop a subdivision per acre estimate.

Water use by subdivisions ranged from 1.5 AF/acre to 3.0 AF/acre. The highest water use was in east Phoenix. As the number of lots per acre decreased the water use per acre also decreased. Subdivision water use is estimated to range from 1.9AF/acre to 2.5 AF/acre and average **2.3 AF/acre**, as summarized in **Table 2**.

Table 2: Average Water Use by Lot Size (AF/Acre)

Average Lot Size (square feet)	East Phoenix	Pinal	Tucson	West Phoenix	Average
	AF/acre				
9,000	3	2	2.3	2.8	2.5
10,000	2.7	1.8	2	2.5	2.3
12,000	2.3	1.5	1.7	2.1	1.9

Manufacturing Facilities

Arizona is becoming a hub for manufacturing, in large part due to significant federal and state investment and favorable economic and geographic conditions. There are little to no annual water use report data on manufacturing facilities in publicly available datasets, such as those maintained by ADWR and relied upon in this analysis. Taiwan Semiconductor Manufacturing Company (TSMC) and Intel are two major companies with facilities in Arizona who have publicly provided estimates of their facility water usage. TSMC estimates using 4.75 million gallons per day (MGD) or 5,321 AF annually at its 1,100-acre facility, equivalent to 4.8 AF/acre. Intel estimates using 1.5 MGD or 1,680 AF annually at its 700-acre facility, equivalent to 2.4 AF/acre¹⁶. Together these facilities use an estimated **3.6 AF/acre** annually on average.

Data Centers

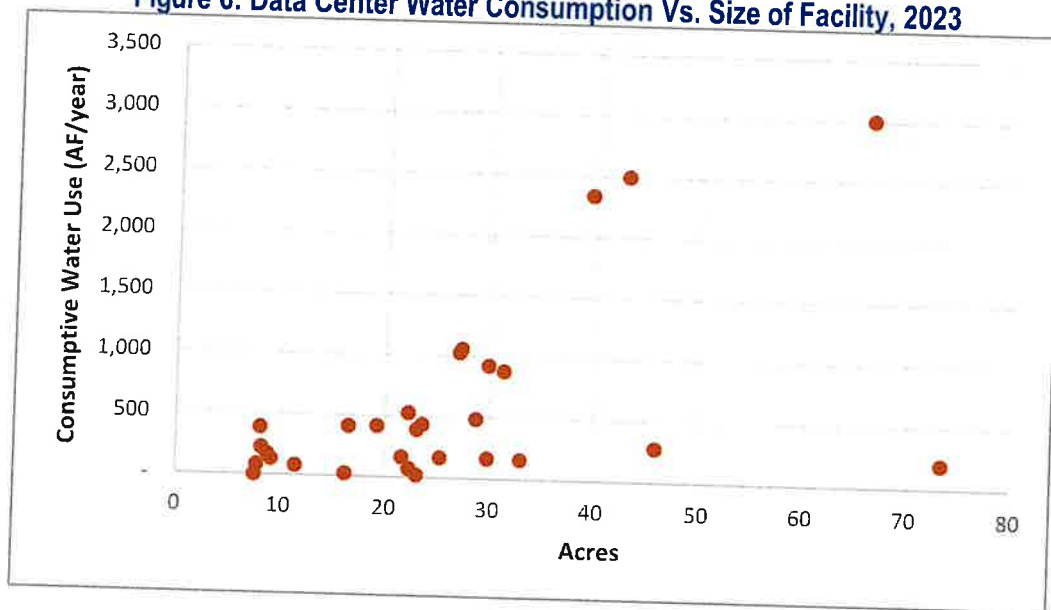
As data center facilities are relatively new in Arizona, ADWR does not collect annual reports from these water users. However, data can be collected from company sustainability reports, local water management plans, press releases, and news articles. Water use information for 30 facilities was collected by WestWater from across the United States. Of

¹⁶ AZ Central Article: *How much water will TSMC Arizona use? Probably a lot less than you think.* Joanna Allhands. June 12, 2024. [TSMC Arizona is on track to use a lot less water than you think \(azcentral.com\)](https://www.azcentral.com/story/news/local/arizona/2024/06/12/tsmc-arizona-water-use/7444444002/)

this dataset, two facilities are in Arizona. Data center water use is influenced primarily by size of the facility and the amount of power used at the facility. To develop a comparable water use estimate to other land uses, total water use for each facility was divided by size of the facility in acres.

Water use was correlated with total size at the facility as shown in **Figure 6**. Water use by size ranged from 0.5 AF/acre to 59.2 AF/acre, with an average of 18.6 AF/acre. The two facilities in Arizona had similar per acre water use, averaging 6.3 AF/acre.

Figure 6: Data Center Water Consumption Vs. Size of Facility, 2023



Power

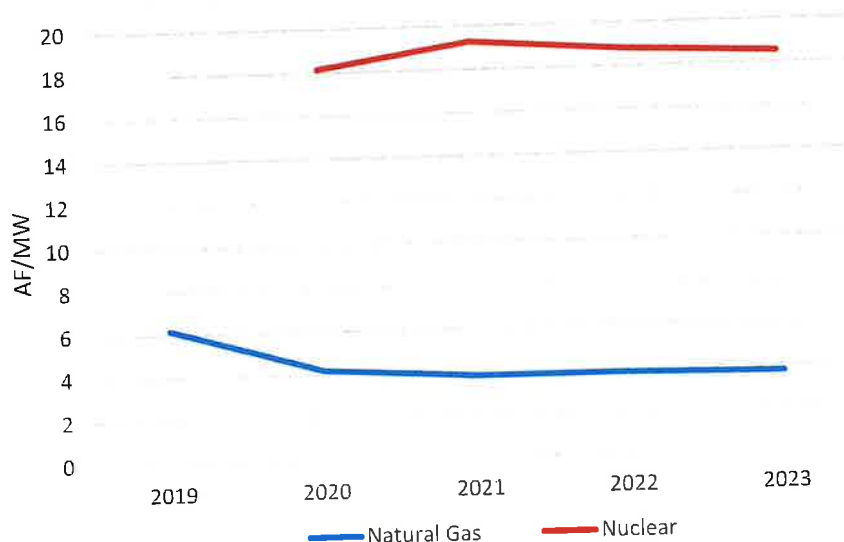
ADWR annual report data were used to estimate water use for the power subsector consisting of nuclear and natural gas. While there are other power generation facility types in Arizona outside the AMAs, this analysis only considers those AMA facilities whose water use is reported to ADWR. ADWR data also included information on power generated at each facility by month. However, these data were inconsistently reported and the units used were often unclear. To ensure a comparable unit, ADWR used publicly available information on each of the facilities to determine the MW capacity.¹⁷ The total water use was divided by the generating capacity of each facility to estimate an AF/MW.

ADWR collects annual report data for eight power facilities in the AMAs, including one nuclear and seven natural gas facilities. Water use was filtered to the type of facility as the difference in reported use across facility type was vast. Over the five-year analysis period,

¹⁷ SRP Power Generation Sources (2024). Salt River Project. <https://www.srpnet.com/grid-water-management/grid-management/power-generation-stations>

water use at Arizona natural gas power facilities ranged from 3.7 AF/MW to 6.2 AF/MW and averaged **4.3 AF/MW**. In contrast, the Arizona nuclear facility used more water, averaging **18.7 AF/MW**. Water use by power facilities is summarized in **Figure 7**.

Figure 7: Power Facility Average Water Use, 2019-2023 (AF/MW)



Solar

Because solar facilities use such a small amount of water, ADWR does not require annual water usage reporting and therefore data are limited. In general, ADWR-exempt uses account for less than 100 AF of water per year¹⁸.

The National Renewable Energy Laboratory (NREL) completed a study on water supply and demand conditions impacting the solar industry, which includes estimates of solar water use¹⁹. The study includes water consumption estimates for photovoltaic (PV) solar. PV is a non-thermal renewable energy technology that does not require water but can use a relatively small amount of water primarily for washing panels. This technology is commonly used in solar facilities because it is a renewable, non-polluting, and inexhaustible energy source. The estimated median water use rate for solar is 25 gallons per megawatt hours (MWh) or 0.0001 AF/MWh, which represents the volume of water per unit of electricity generation. NREL demonstrates that solar uses water at a rate of virtually zero to produce electricity.

¹⁸ Industrial Program | Arizona Department of Water Resources (azwater.gov)

¹⁹ Water Impacts of High Solar PV Electricity Penetration. National Renewable Energy Laboratory. September 2015.

Most solar projects in the Southwest US are never washed during operation, however for this analysis, the NREL water use per MWh estimate was utilized to evaluate an example 200 MW solar project on 1,200 acres. A facility of this size is generally in the range with recent power purchase contracts announced by Arizona Public Service and Salt River Project, two of Arizona's largest electric utilities. According to FreeingEnergy, one MW of solar power produces 2,146 MWh of solar energy²⁰. In this example, the total water use of the facility would be equivalent to 32.9 AF. Over a 200 MW, 1,200-acre facility, this equates to an annual water use estimated to total **0.16 AF/MW** and **0.03 AF/acre**.

²⁰ FreeingEnergy. How many MWh of solar energy comes from a MW of solar panels?
<https://www.freeingenergy.com/math/solar-pv-gwh-per-mw-power-energy-mwh-m147/#:~:text=On%20average%2C%20across%20the%20US,of%20solar%20energy%20per%20year.>



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7144 E. Stetson Dr., Suite 300
Scottsdale, AZ 85251

May 26, 2026

Mayor and Members of the City Council
City of Surprise
16000 N. Civic Center Plaza
Surprise, AZ 85374

RE: City of Surprise Battery Energy Storage System (BESS) Text Amendment, Case FS23-1041

Dear Mayor and Councilmembers:

The Arizona Solar Energy Industries Association (AriSEIA) appreciates the opportunity to provide continued comments on the City of Surprise draft Battery Energy Storage System (BESS) ordinance. AriSEIA previously submitted written comments on November 14, 2024, February 18, 2025, and January 5, 2026. AriSEIA representatives also attended both public meetings regarding this ordinance, as well as the Planning and Zoning Commission work session on May 21, 2026. We appreciate the City's continued engagement and the revisions reflected in the latest draft.

The current draft reflects meaningful progress, including alignment with National Fire Protection Association (NFPA) 855 for internal battery cabinet separation requirements. AriSEIA also appreciates the City's efforts to create a regulatory pathway for utility-scale battery storage through the overlay framework. Several targeted revisions remain necessary, however, to ensure the ordinance is appropriately scoped, workable, and supportive of responsible energy infrastructure development.

1. Applicability and Scope

The most significant remaining issue is applicability. While the ordinance now excludes batteries located within single-family and multi-family residential projects, it also includes accessory battery energy storage systems within the ordinance's scope. By contrast, Mesa expressly excludes accessory systems from its utility-scale BESS requirements when those systems serve the enterprise functions of the on-site property owner or tenant and meet defined size thresholds. Mesa City Code § 11-31-37.¹

As drafted, the ordinance could apply not only to utility-scale battery storage projects, but also to commercial, industrial, institutional, and backup power systems serving on-site load. This creates substantial and likely unintended consequences for commercial battery storage paired with rooftop solar, school or hospital backup power systems, industrial behind-the-meter storage, and other customer-sited installations. These systems are fundamentally different from utility-scale infrastructure and should not be subject to the same zoning framework.

¹ Mesa Resolution 12441, dated December 1, 2025, *available here*
<https://www.mesaaz.gov/files/assets/public/v/1/business-development/devsvcs/codesords/bess-adoption-by-ref-doc.pdf>.

Zoning ordinances should be clear on their face. Reliance on future interpretation or enforcement discretion creates risk of inconsistent application, appeals, and unintended barriers to distributed energy deployment. Maricopa County addresses this issue by expressly distinguishing utility-scale systems from customer-sited systems. AriSEIA recommends replacing the current applicability language in Chapter 101, Article II with the following:

“For purposes of this ordinance, a BESS shall be considered utility-scale when designed for energy market participation or grid services and when not intended to primarily serve on-site end-use load. Residential, commercial, and industrial systems installed behind the customer meter or primarily serving on-site consumption shall be considered distributed energy resources and are exempt from Chapter 106.”

This revision would ensure that the ordinance applies only to utility-scale projects while avoiding unintended impacts to customer-sited storage systems. It would also provide clearer direction to applicants, staff, and the public regarding which systems are subject to the overlay framework.

2. Setbacks and Separation Requirements

AriSEIA appreciates the Planning and Zoning Commission’s efforts to reduce the originally proposed residential separation requirements. However, the currently recommended framework remains too restrictive. The American Planning Association has identified BESS-specific setbacks generally ranging from 50 to 150 feet. Am. Plan. Ass’n, *Zoning Practice* 10 (Mar. 2024).²

Maricopa County requires battery energy storage units to be setback a minimum of 100 feet from all lot lines. Maricopa County Zoning Ordinance art. 603.10.³ Buckeye requires a 150-foot separation from residential properties, measured from the BESS facility to the nearest residential structure, building setback line, or residential property line depending on site conditions. Buckeye, Ariz., Development Code § 5.8, Commercial and Industrial Use Specific Standards, Battery Energy Storage Systems.⁴

Against that backdrop, a combined 250-foot requirement exceeds both Arizona peer jurisdictions and the planning benchmarks identified by the American Planning Association. AriSEIA recommends that 150 feet be treated as the maximum separation requirement. If the City determines that a residential separation requirement is warranted, AriSEIA recommends replacing the current setback and separation language with the following:

“A utility-scale BESS shall be located no closer than one hundred fifty feet (150’) from an existing residential dwelling unit, measured in a straight line from the outermost battery cabinet, enclosure, or associated battery equipment to the nearest exterior wall of the dwelling.”

² American Planning Association, *Zoning Practice: Battery Energy Storage Systems*, available here https://planning-org-uploaded-media.s3.amazonaws.com/publication/download_pdf/Zoning-Practice-2024-03.pdf.

³ Maricopa County, Article 603.10, available here <https://esd.maricopa.gov/DocumentCenter/View/4785/P-18---Zoning-Ordinance-PDF?bidId=>.

⁴ City of Buckeye, Chapter 7, Development Code 3.2, available here https://library.municode.com/az/buckeye/codes/code_of_ordinances?nodeId=CD_ORD_CH7DECO.

This approach directly addresses compatibility concerns without creating effective barriers to otherwise appropriate development. It also avoids stacking multiple setback and separation requirements in a way that exceeds relevant safety and planning benchmarks.

3. Noise Standard

The revised ordinance replaces the prior measurable noise threshold with a requirement that the BESS generate no noise perceptible beyond the site boundaries. This creates a less workable and less objective standard than the prior draft. "Perceptible" is inherently subjective. Perception varies based on ambient conditions, time of day, surrounding land uses, and individual sensitivity. Nearly any infrastructure may generate detectable sound under some conditions. A subjective perception standard creates uncertainty for applicants, staff, and enforcement alike and does not provide a clear compliance framework.

AriSEIA recommends replacing the current language with an objective, measurable acoustic standard. Consistent with prior AriSEIA recommendations, a 65 dBA limit at the project boundary would provide a clearer and more administrable framework while avoiding subjective enforcement disputes. AriSEIA recommends replacing the current language with the following:

"Operational noise attributable to the BESS shall not exceed 65 dBA at the project boundary, as demonstrated by a study prepared by a qualified third-party acoustical engineer."

This approach provides an objective and enforceable standard while recognizing that battery storage systems are industrial infrastructure and should be regulated using measurable performance criteria rather than subjective perception-based requirements.

4. Administrative Flexibility

The revised draft requires modifications that change or expand site design beyond what was approved in the original rezone application to return through another Type 3 rezone process. This is unnecessarily restrictive and impractical.

Battery storage projects evolve during engineering, procurement, and permitting. Equipment specifications, fire safety design, and layout details often change as projects mature. Requiring full rezoning for design refinements that do not alter the core characteristics of an approved project creates unnecessary delay, cost, and uncertainty. A workable ordinance should preserve public safety while allowing reasonable flexibility for routine project evolution.

AriSEIA also recommends that the ordinance include a limited waiver mechanism for projects that substantially comply with the ordinance but require relief from a specific provision. Without that flexibility, otherwise appropriate projects may be blocked based on rigid application of individual requirements, even where equivalent safety and compatibility outcomes can be achieved. AriSEIA recommends replacing the current language with the following two provisions:

"Administrative approval may be granted for modifications that do not increase the approved project footprint, reduce required setbacks, increase approved nameplate capacity, or materially alter approved access, emergency response, or fire protection features."

"The Planning and Zoning Commission may grant a waiver from specific ordinance requirements

upon a finding that the proposed alternative provides equivalent or greater protection for public safety and compatibility with surrounding land uses."

This approach preserves objective guardrails for routine project refinements while maintaining public oversight for requests that require deviation from specific ordinance standards.

5. Need for Timely Action

AriSEIA encourages the City to make targeted revisions and move this ordinance forward promptly. As currently structured, battery storage projects cannot move forward in Surprise because there is no workable regulatory pathway for development.

That uncertainty carries real economic development consequences. Battery storage is increasingly important infrastructure that supports grid reliability, business investment, and economic growth. Maintaining an effective prohibition while ordinance issues remain unresolved creates a missed economic development opportunity for the City. The City can make targeted revisions now and adopt a workable framework this summer so that appropriately sited projects can move forward.

6. Conclusion

AriSEIA supports reasonable, data-driven regulation of utility-scale battery energy storage systems. The City has made meaningful progress toward creating a pathway for these projects, but the ordinance should be revised to clarify applicability, avoid excessive cumulative setbacks, replace subjective performance standards, provide administrative flexibility, and move expeditiously toward adoption.

With these targeted revisions, the City can protect residents while establishing a clear, defensible, and practical framework for needed energy infrastructure. We appreciate the opportunity to continue working with the City toward that outcome.

Respectfully,
Autumn Johnson
Executive Director
AriSEIA



May 27, 2026

Mayor Kevin Sartor
Surprise City Council
16000 N. Civic Center Plaza
Surprise, AZ 85374

Re: Case No. FS23-1041 – Draft Surprise Zoning Text Amendment Regarding Battery Energy Storage Systems (BESS) Zoning Districts

Dear Mayor Sartor,

As president and CEO of the Arizona Technology Council, the state's premier trade association representing more than 750 science and technology companies, I respectfully submit the following recommendations for consideration as the City of Surprise finalizes amendments to its land development ordinance governing the siting of battery energy storage systems (BESS).

Arizona's continued economic growth depends upon access to reliable, affordable and increasingly flexible energy infrastructure. The Council supports an all-of-the-above energy strategy, except coal, that leverages Arizona's diverse portfolio of clean, reliable and innovative energy resources to meet rising demand and sustain economic competitiveness.

Utility-scale BESS facilities play an increasingly important role in maintaining electric grid reliability and resilience. These systems store energy during periods of excess generation and discharge it during periods of peak demand, particularly after sunset when solar generation declines and electricity demand remains elevated. In doing so, BESS facilities reduce strain on traditional generation resources, improve grid stability and contribute to more efficient long-term energy management. They also create meaningful economic value through construction, engineering, logistics and advanced manufacturing employment.

Like many emerging technologies, BESS facilities have evolved significantly. Modern installations are typically designed as modular, outdoor systems comprised of weather-resistant enclosures containing smaller battery groupings with engineered spacing intended to limit fire propagation and improve operational safety. Monitoring, detection and control technologies likewise have advanced considerably, allowing earlier identification of anomalies and proactive intervention. These advancements are reflected in the 2026 edition of the National Fire Protection Association's NFPA 855 standard, which incorporates more rigorous fire and explosion testing protocols and reflects growing operational experience with stationary energy storage systems.

A member of the Arizona Technology Council team attended the Surprise Community Development Department's January 5, 2026, open house to better understand the proposed draft language then participated in the Planning and Zoning Commission's May 21, 2026, work study session, where the team member offered preliminary comments regarding potential revisions. While we appreciate the city's thoughtful effort to address safety and community concerns, several provisions of the proposed amendments may unintentionally create barriers to deployment and limit the city's ability to support future energy reliability and economic growth.

Accordingly, we respectfully recommend the following refinements:

Applicability – The ordinance currently appears to include accessory BESS within its scope, potentially subjecting not only utility-scale facilities but also commercial and industrial systems designed to serve on-site energy

demand—including those located at schools, hospitals and business facilities—to the same zoning framework. We recommend expressly exempting from these zoning amendments any residential, commercial and industrial battery storage systems installed primarily to serve on-site energy use.

Separation Requirements – The proposed 1,500-foot separation requirement from residential properties is excessive and does not appear to be supported by BESS-specific engineering or risk assessment data. During the Planning and Zoning Commission session in May, multiple commissioners expressed concern that the proposed setback was overly restrictive and warranted reconsideration. We strongly encourage the city to align its ordinance with the separation standards established under NFPA 855, which are grounded in nationally recognized science, engineering and operational experience. Alignment with NFPA 855, including its 150-foot residential separation framework where applicable, preserves public safety while avoiding unnecessary restrictions on critical energy infrastructure.

Noise Standards – Noise regulations should be based on clearly defined, objective and measurable performance standards. Establishing compliance based upon whether sound is merely “perceptible” introduces unnecessary subjectivity, creates regulatory uncertainty and may discourage investment without delivering meaningful additional public benefit. We encourage adoption of an explicit decibel-based standard that is predictable, enforceable and technically grounded.

Waiver Provision – We recommend incorporating a waiver or administrative flexibility provision into the ordinance. Such a provision would allow the city to evaluate circumstances where a proposed project may not conform to a specific requirement but otherwise demonstrates strong siting characteristics, compliance with national safety standards and meaningful community benefit. This approach would provide the city with appropriate discretion while maintaining overall policy objectives.

Arizona’s innovation-driven economy depends on modern, resilient and flexible energy systems. The City of Surprise has demonstrated a strong commitment to supporting advanced industry and responsible growth, and we encourage continued alignment of local zoning policy with nationally recognized safety standards and best practices that enable the responsible deployment of emerging energy technologies.

Thank you for your leadership and consideration of policies that reinforce Surprise’s position as a forward-looking and business-friendly community. Should the Arizona Technology Council’s assistance be needed to provide additional technical expertise, data or stakeholder input, we would welcome the opportunity.

Respectfully,

ARIZONA TECHNOLOGY COUNCIL & SCITECH INSTITUTE



Steven G. Zylstra
President & CEO

May 27, 2026

Surprise City Council
District 2 Councilmember Earle Greenberg
16000 N. Civic Center Plaza
Surprise, AZ 85374

Re: Case No. FS23-1041 – Draft Surprise Zoning Text Amendment Regarding Battery Energy Storage Systems (BESS) Zoning Districts

Dear Vice Mayor Greenberg,

As president and CEO of the Arizona Technology Council, the state's premier trade association representing more than 750 science and technology companies, I respectfully submit the following recommendations for consideration as the City of Surprise finalizes amendments to its land development ordinance governing the siting of battery energy storage systems (BESS).

Arizona's continued economic growth depends upon access to reliable, affordable and increasingly flexible energy infrastructure. The Council supports an all-of-the-above energy strategy, except coal, that leverages Arizona's diverse portfolio of clean, reliable and innovative energy resources to meet rising demand and sustain economic competitiveness.

Utility-scale BESS facilities play an increasingly important role in maintaining electric grid reliability and resilience. These systems store energy during periods of excess generation and discharge it during periods of peak demand, particularly after sunset when solar generation declines and electricity demand remains elevated. In doing so, BESS facilities reduce strain on traditional generation resources, improve grid stability and contribute to more efficient long-term energy management. They also create meaningful economic value through construction, engineering, logistics and advanced manufacturing employment.

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A member of the Arizona Technology Council team attended the Surprise Community Development Department's January 5, 2026, open house to better understand the proposed draft language then participated in the Planning and Zoning Commission's May 21, 2026, work study session, where the team member offered preliminary comments regarding potential revisions. While we appreciate the city's thoughtful effort to address safety and community concerns, several provisions of the proposed amendments may unintentionally create barriers to deployment and limit the city's ability to support future energy reliability and economic growth.

Accordingly, we respectfully recommend the following refinements:

Applicability – The ordinance currently appears to include accessory BESS within its scope, potentially subjecting not only utility-scale facilities but also commercial and industrial systems designed to serve on-site energy

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ARIZONA TECHNOLOGY COUNCIL & SCITECH INSTITUTE



Steven G. Zylstra
President & CEO

May 27, 2026

Surprise City Council
District 3 Councilmember Patrick Duffy
16000 N. Civic Center Plaza
Surprise, AZ 85374

Re: Case No. FS23-1041 – Draft Surprise Zoning Text Amendment Regarding Battery Energy Storage Systems (BESS) Zoning Districts

Dear Councilmember Duffy,

As president and CEO of the Arizona Technology Council, the state's premier trade association representing more than 750 science and technology companies, I respectfully submit the following recommendations for consideration as the City of Surprise finalizes amendments to its land development ordinance governing the siting of battery energy storage systems (BESS).

Arizona's continued economic growth depends upon access to reliable, affordable and increasingly flexible energy infrastructure. The Council supports an all-of-the-above energy strategy, except coal, that leverages Arizona's diverse portfolio of clean, reliable and innovative energy resources to meet rising demand and sustain economic competitiveness.

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ARIZONA TECHNOLOGY COUNCIL & SCITECH INSTITUTE



Steven G. Zylstra
President & CEO

May 27, 2026

Surprise City Council
District 4 Councilmember Johnny V. Melton
16000 N. Civic Center Plaza
Surprise, AZ 85374

Re: Case No. FS23-1041 – Draft Surprise Zoning Text Amendment Regarding Battery Energy Storage Systems (BESS) Zoning Districts

Dear Councilmember Melton,

As president and CEO of the Arizona Technology Council, the state's premier trade association representing more than 750 science and technology companies, I respectfully submit the following recommendations for consideration as the City of Surprise finalizes amendments to its land development ordinance governing the siting of battery energy storage systems (BESS).

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ARIZONA TECHNOLOGY COUNCIL & SCITECH INSTITUTE



Steven G. Zylstra
President & CEO

May 27, 2026

Surprise City Council
District 5 Councilmember Jack Hastings
16000 N. Civic Center Plaza
Surprise, AZ 85374

Re: Case No. FS23-1041 – Draft Surprise Zoning Text Amendment Regarding Battery Energy Storage Systems (BESS) Zoning Districts

Dear Councilmember Hastings,

As president and CEO of the Arizona Technology Council, the state's premier trade association representing more than 750 science and technology companies, I respectfully submit the following recommendations for consideration as the City of Surprise finalizes amendments to its land development ordinance governing the siting of battery energy storage systems (BESS).

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ARIZONA TECHNOLOGY COUNCIL & SCITECH INSTITUTE



Steven G. Zylstra
President & CEO

May 27, 2026

Surprise City Council
District 6 Councilmember Chris Judd
16000 N. Civic Center Plaza
Surprise, AZ 85374

Re: Case No. FS23-1041 – Draft Surprise Zoning Text Amendment Regarding Battery Energy Storage Systems (BESS) Zoning Districts

Dear Councilmember Judd,

As president and CEO of the Arizona Technology Council, the state's premier trade association representing more than 750 science and technology companies, I respectfully submit the following recommendations for consideration as the City of Surprise finalizes amendments to its land development ordinance governing the siting of battery energy storage systems (BESS).

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Respectfully,

ARIZONA TECHNOLOGY COUNCIL & SCITECH INSTITUTE



Steven G. Zylstra
President & CEO



**ARIZONA
INTERFAITH**
POWER AND LIGHT

The Honorable City Council Members of the City of Surprise
16000 N Civic Center Plaza
Surprise, AZ 85374-7463

May 28, 2026

Re.: Support for Practicable Battery Energy Storage System Ordinance

Dear Mayor Sartor and City Council Members:

Our organization, Arizona Interfaith Power & Light, brings people of faith together to care for God's creation and to work for a better climate. Working with congregations and people of faith means that we are especially concerned with the well-being of people and communities.

We write today to support the adoption of a Battery Energy Storage System (BESS) ordinance that includes a modest 100-foot setback from residences.

As Arizona experiences growing energy demand, clean energy projects will be a vital part of the solution. In Maricopa County there is a life-or-death need for reliable energy sources when we experience extreme temperatures in the summer. We know that affordability is an issue here as well, as families struggle to pay summer electric bills. Large scale battery and storage projects provide needed reliability and affordability. Additionally, they use much less water than gas or coal generation, a significant factor to most, if not all, Arizona communities

For all these reasons, the ongoing adoption of clean energy projects is significant for Arizona families and individuals. We appreciate your consideration and leadership in this area.

Sincerely,

Melanie Beikman

Director, Arizona Interfaith Power & Light

Michael Sills-Trausch

President, Arizona Interfaith Power & Light



July 24, 2026

Christina Sexton
Planning Staff
City of Surprise Community Development
16000 N. Civic Center Plaza
Surprise, Arizona 85374

Via email: christina.sexton@surpriseaz.gov

RE: Battery Energy Storage System Text Amendment, Case FS23-1041

Dear Ms. Sexton:

On behalf of the Arizona Public Health Association, I am writing to provide comments about the City of Surprise's proposed Battery Energy Storage System ordinance.

AZPHA supports an ordinance that protects nearby residents, firefighters and other first responders while also allowing responsibly designed and appropriately located energy-storage projects to move forward. Reliable electricity is a public health necessity in Arizona, particularly during periods of extreme heat. Battery energy storage can strengthen the reliability of the electrical grid and allow more effective use of renewable-energy resources.

Surprise has firsthand experience with the potential hazards associated with battery facilities, so careful regulation is clearly called for. However, public safety is best protected through modern engineering, fire-code compliance, emergency planning, equipment testing and enforceable operating standards—not through arbitrary setbacks so large that they effectively prohibit projects regardless of their design or location.

Setbacks

We appreciate the Planning and Zoning Commission's willingness to reconsider the originally proposed 1,500-foot residential setback. Of the three options reportedly being presented—100, 500 and 1,000 feet—we recommend the *100-foot option*.

That distance is consistent with the current Maricopa County Zoning Ordinance, which requires battery energy storage units to be set back at least 100 feet from all lot lines. Clean Air Task Force's April 2026 Southwest zoning guidance identifies 50 to 150 feet as a reasonable range when a BESS-specific setback is used.



The City should also avoid stacking separate setback requirements in a way that creates a substantially larger effective distance. For example, combining a project-boundary setback with an added battery-container-to-perimeter-wall requirement could create a de facto separation of 200 or 250 feet. AriSEIA's May 2026 comments correctly noted that such a combined requirement would exceed both the Maricopa County standard and commonly used planning benchmarks.

We recommend that the ordinance measure from the outermost battery cabinet or enclosure and provide that the total required separation from battery equipment to an adjoining residential property or existing dwelling does not exceed 150 feet, unless a site-specific objective hazard analysis shows more distance is necessary.

Safety standards

The ordinance should incorporate the latest edition of National Fire Protection Association Standard 855 and require compliance with applicable UL 9540 and UL 9540A equipment-certification and fire-testing standards. It should also require a site-specific hazard-mitigation analysis, a commissioning plan, an emergency-response plan developed with Surprise Fire-Medical, proper access for emergency vehicles, first-responder training and an enforceable decommissioning plan.

These requirements address the actual design and operation of a facility and provide stronger protection than an unusually large one-size-fits-all setback. CATF specifically recommends incorporating current national safety standards by reference so that local requirements continue to evolve as battery technology and fire-safety practices improve.

Noise

The City should replace any requirement that BESS operations produce "no perceptible noise" outside the property. "Perceptible" is subjective and will be difficult for applicants, neighbors and enforcement staff to interpret consistently.

Instead, the ordinance should use an objective and measurable acoustic standard, verified through analysis by a qualified acoustical engineer. CATF recommends applying the noise limits of the underlying zoning district or using a defined limit such as a 60 dBA time-weighted average measured at the property boundary. CATF also recommends allowing noise waivers based on informed agreements with adjoining property owners.

Administrative adjustments

The ordinance should include a reasonable adjustment or waiver process. Planning staff should be able to approve minor modifications that do not expand the project footprint, increase its approved capacity, reduce required setbacks or materially alter emergency access and fire-protection features.

For other provisions, the Planning and Zoning Commission should be authorized to approve an alternative when the applicant shows that it will provide equivalent or greater protection for public safety and surrounding properties. Without such a process, an otherwise appropriate project could be denied because of a site-specific circumstance that could readily be addressed through alternative engineering or mitigation.

Finally, the ordinance should clearly apply to utility-scale projects serving the electrical grid and should exclude ordinary residential, commercial, hospital, school and industrial battery systems that primarily provide backup power or serve on-site electricity needs.

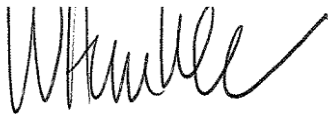
AzPHA urges the Planning and Zoning Commission to recommend the 100-foot setback choice and asks the City Council to adopt an ordinance that:

- Avoids cumulative or stacked setbacks exceeding 150 feet;
- Uses objective and measurable noise standards;
- Incorporates current national fire and equipment-safety standards;
- Provides a reasonable administrative adjustment and waiver process; and
- Clearly limits the ordinance to utility-scale battery energy storage projects.

These provisions would protect the public while giving Surprise a clear, defensible and workable process for evaluating future energy-storage projects.

Please include these comments in the public record and distribute them to the members of the Planning and Zoning Commission and City Council in advance of the currently scheduled September 1, 2026 hearing.

Sincerely,

A handwritten signature in black ink, appearing to read 'Will Humble', with a stylized flourish at the end.

Will Humble, MPH
Executive Director, Arizona Public Health Association
Director, Arizona Department of Health Services (2009–2015)

July 27, 2026

Mayor and Members of the City Council
City of Surprise
16000 N. Civic Center Plaza
Surprise, AZ 85374

Re: City of Surprise Battery Energy Storage System (BESS) Text Amendment – Goodyear Ordinance and Setback Framework

Dear Mayor and City Councilmembers,

AriSEIA appreciates the ongoing engagement with the City of Surprise on the BESS ordinance and the meaningful progress that has been made through four rounds of comments and multiple public meetings. We are writing today to bring one additional and timely development to the City's attention as deliberations continue.

The City of Goodyear recently adopted a BESS ordinance that we believe offers a compelling and directly applicable model for Surprise. The Goodyear ordinance establishes a 330-foot setback from residential areas as a baseline while building in a mechanism that allows that setback to be reduced to 150 feet when an applicant submits a plume and toxic gas study as part of the special use permit process. You can review the Goodyear ordinance [here](#).¹

This approach is notable because it takes safety seriously by tying the setback to the actual science. A plume study is a site-specific technical analysis of potential emissions dispersion in the event of an incident, which means the setback reflects real conditions at a real site rather than a uniform standard applied regardless of context. Second, it creates a clear and administratively manageable pathway for projects that can demonstrate equivalent safety through that analysis.

AriSEIA's consistent position has been that a maximum of 150 feet, consistent with NFPA guidance and the Planning and Zoning Commission's own recommendation, is the appropriate baseline. We believe 330 feet with a plume study pathway to 150 feet, as Goodyear has adopted, is a reasonable middle ground that Surprise's municipal neighbors have already found workable. What we do not support is a blanket setback that bears no relationship to the safety literature, peer jurisdictions, or the actual characteristics of a given site.

AriSEIA also wishes to draw the City's attention to the waiver provision included in Goodyear's BESS ordinance. Section 3.11.20 (B)(7)² of Goodyear's recently adopted Zoning Ordinance allows any requirement with the BESS section to be waived through the special use permit process. This kind of administrative flexibility allows the City to establish a clear standard while

¹ City of Goodyear, Zoning Ordinance, P.72, *available here*

<https://www.goodyearaz.gov/home/showpublisheddocument/33651/639192003214330000>

² *Id.* at 75.

preserving the City's ability to respond to projects that meet underlying safety objectives through alternative means. AriSEIA encourages Surprise to incorporate similar waiver language into its own BESS ordinance, ensuring that staff and decision-makers retain the discretion to evaluate projects on their own merits rather than being bound by provisions that may not fit every circumstance.

We respectfully request that Surprise look closely at what Goodyear has done and consider whether a similar framework consisting of a baseline setback with a pathway for reduction (via plume study or a waiver provision for exceptional circumstances) would give Surprise the protection it is appropriately seeking while still establishing an ordinance that responsible projects can meet.

We appreciate the opportunity to continue engaging with the City of Surprise and look forward to working collaboratively toward an ordinance that reflects best practices and supports responsible energy infrastructure development.

Respectfully,
/s/ Autumn T. Johnson
Executive Director
AriSEIA



FS23-1041

Battery Energy Storage Systems (BESS)

Zone Text Amendment

Planning & Zoning Commission

August 6, 2026



SURPRISE

ARIZONA

Timeline

Neighborhood and Stakeholder Outreach

1st Outreach meeting	01/30/2025
2nd Outreach meeting	01/07/2026

Work Sessions

Planning and Zoning Commission – Work Session	05/21/2026
City Council – 1st Work Session	06/02/2026
City Council – 2nd Work Session	06/16/2026

Public Hearings

Planning and Zoning Commission – Public Hearing	08/06/2026
City Council – Public Hearing	09/01/2026

Definitions

■ Battery Energy Storage System (BESS)

A facility consisting of electrochemical storage batteries, battery chargers, controls, power conditioning systems and associated electrical equipment, assembled together, capable of storing energy in order to supply electrical energy at a future time, not to include any batteries or systems less than 5 megawatts that are accessory to a residential, commercial, industrial, or institutional facility.

Battery cabinet

A component of a Battery Energy Storage System (BESS) that is self-contained, often modular, unit designed to securely house batteries, inverters, cooling systems, and fire management equipment.



Purpose – Battery (B) Overlay

Create an Overlay zoning district specifically for BESS

- Provides a use allowance and path to development
- Ensures public outreach and Council discretion
- Does not affect existing zoning districts

Applicability – Battery (B) Overlay

- Permitted in all character areas as set forth in the General Plan 2040
- Provides for distinct regulations and development standards
- May be applied to any zoning district in the City
 - Cannot be combined with any other overlay district (Surprise Heritage District, PUD, TND), or any individual residential dwellings

Process

Rezone – Type III

- Project narrative and preliminary site plan shall be submitted with the rezone document
- Neighborhood Meeting
- Recommendation from Planning and Zoning Commission to the Mayor and City Council
- Approval from City Council

Process cont.

Site Plan – Type I

- Any modifications to the site plan requires another Type III review, as determined by the Community Development Director or designee
- Required prior to submittal of a building permit and/or grading permit.

Development Standards

- 8' – 12' perimeter wall around the BESS (minimum 150' from property line)
- Separation distance between battery cabinets/cabinets shall only provide external access
- Minimized grading
- Landscaping
 - 10' separation from buildings/structures
 - 25' provided along outside perimeter wall



Image: Fluence

Development Standards cont.

- Site Lighting, on-site parking, and proposed signs shall comply with the LDO
- All parking, fire access roadways and drive aisles shall be paved.



Development Standards cont.

- The following plans shall be submitted for review:
 - Hazardous Materials Impact Analysis (HMIA)
 - Hazardous Materials Management Plan (HMMP)
 - Hazardous Materials Inventory Statement (HMIS)
 - Noise Study
 - Security & Surveillance Plan
 - Commissioning Plan
 - Decommissioning Plan

Planning and Zoning Commission

Topics of discussion:

- Generally supportive of the use and text amendment approach
- Noise – mirror existing code
- Commercial purposes – revise to exclude batteries in association with rooftop solar
- Acceptable distance of separation/setback requirements
- Economic impact
- Flexibility and administrative discretion

Commission Direction:

- Consensus to reduce existing separation from 1,500ft to 100ft
- Clarify exemption for commercial-type installations

City Council

Topics of discussion:

- Commercial purposes – revise to exclude batteries in association with rooftop solar
- Acceptable distance of separation/setback requirements
- Economic Impact

City Council Direction:

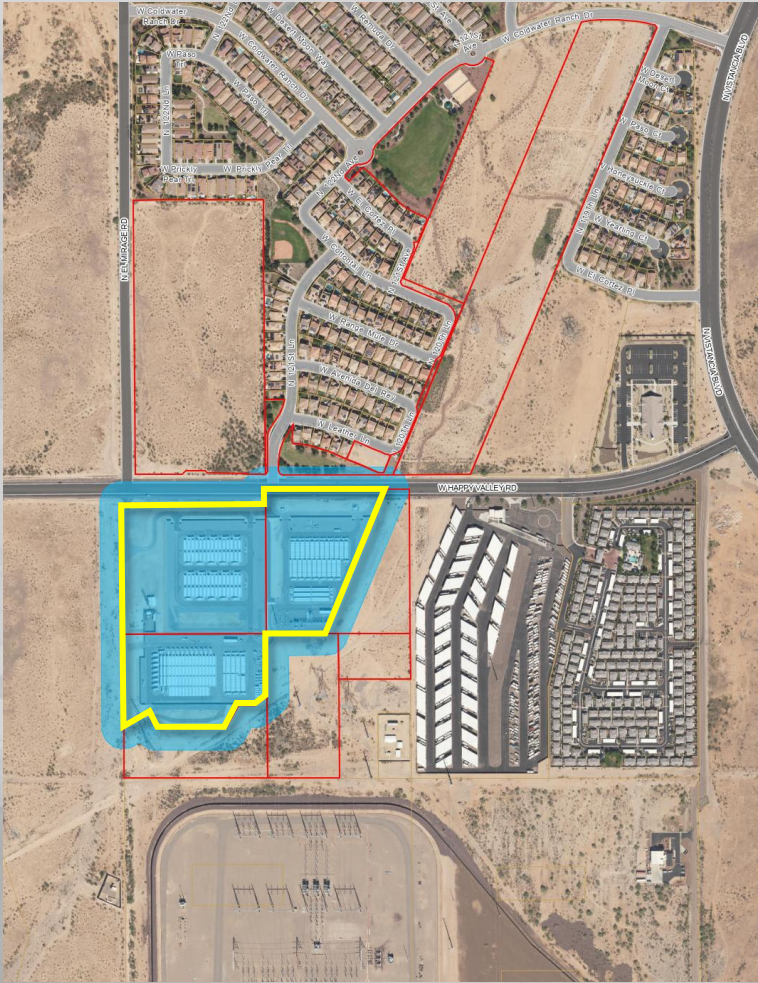
- Consensus to reduce existing separation with three options: 1,500 ft to
 - 1,000 ft
 - 500 ft
 - 100 ft
- Clarify exemption for commercial-type installations
- Remove CUP process as an accessory use and proceed through overlay process

Separation Comparison

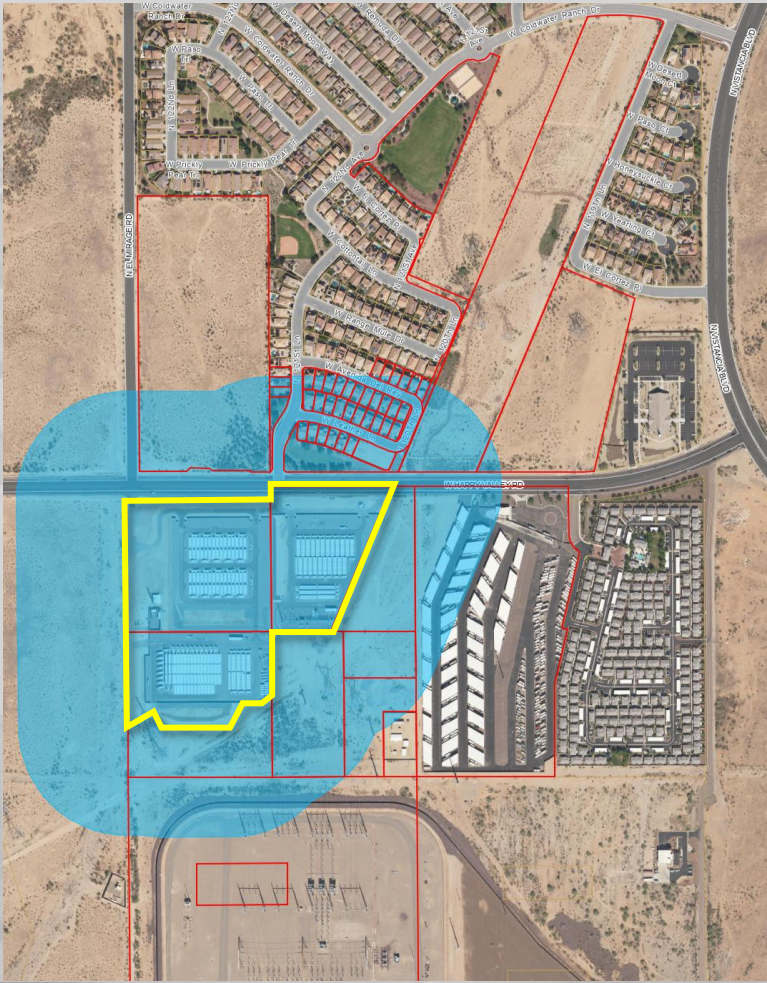
	Surprise <i>(Proposed)</i>	Goodyear	Buckeye	Mesa	Maricopa County
Jurisdiction Separation Criteria	• 1,500 feet from any 'existing dwelling unit'	• 330 feet from residential/sensitive uses to modules; 150 feet through SUP with plume study • 150 feet to Commercial/100 feet to Industrial buildings	• All BESS facilities 150 feet from existing or planned residential properties	• 1,000 feet to residential; • 150 feet to Commercial/Industrial buildings	• 100 feet from lot line

Buffer Comparison- Existing Residential

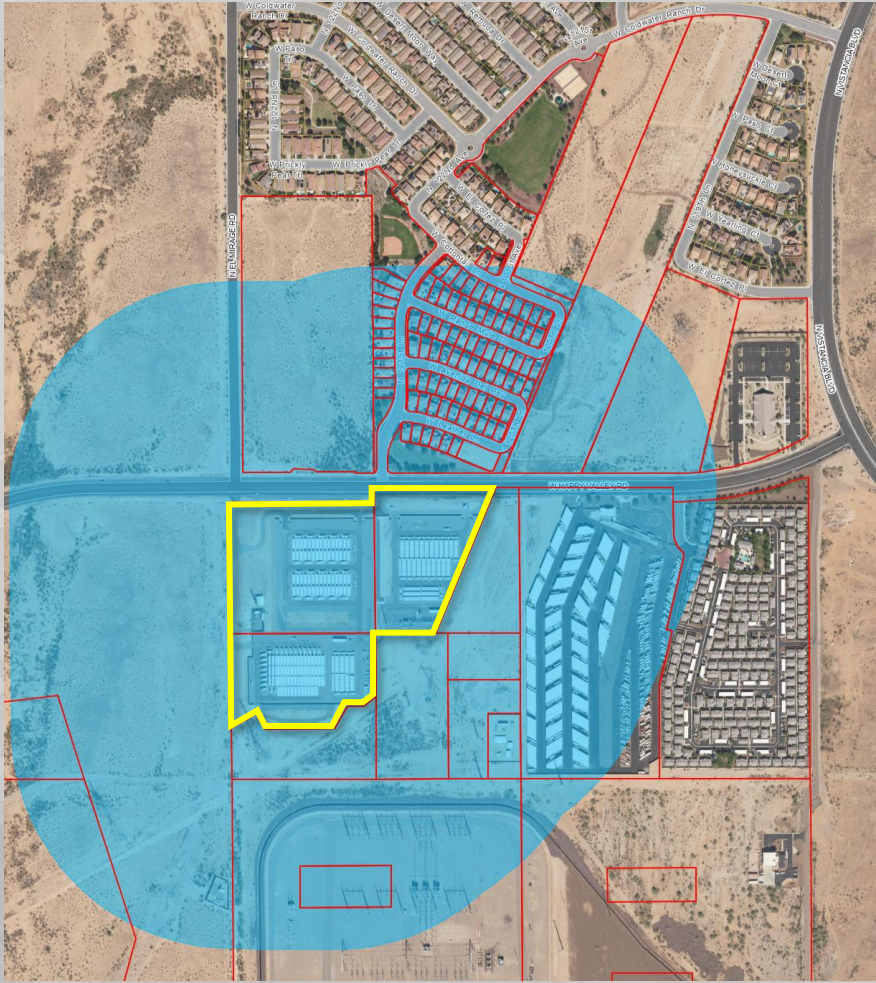
100-Feet from Property Line



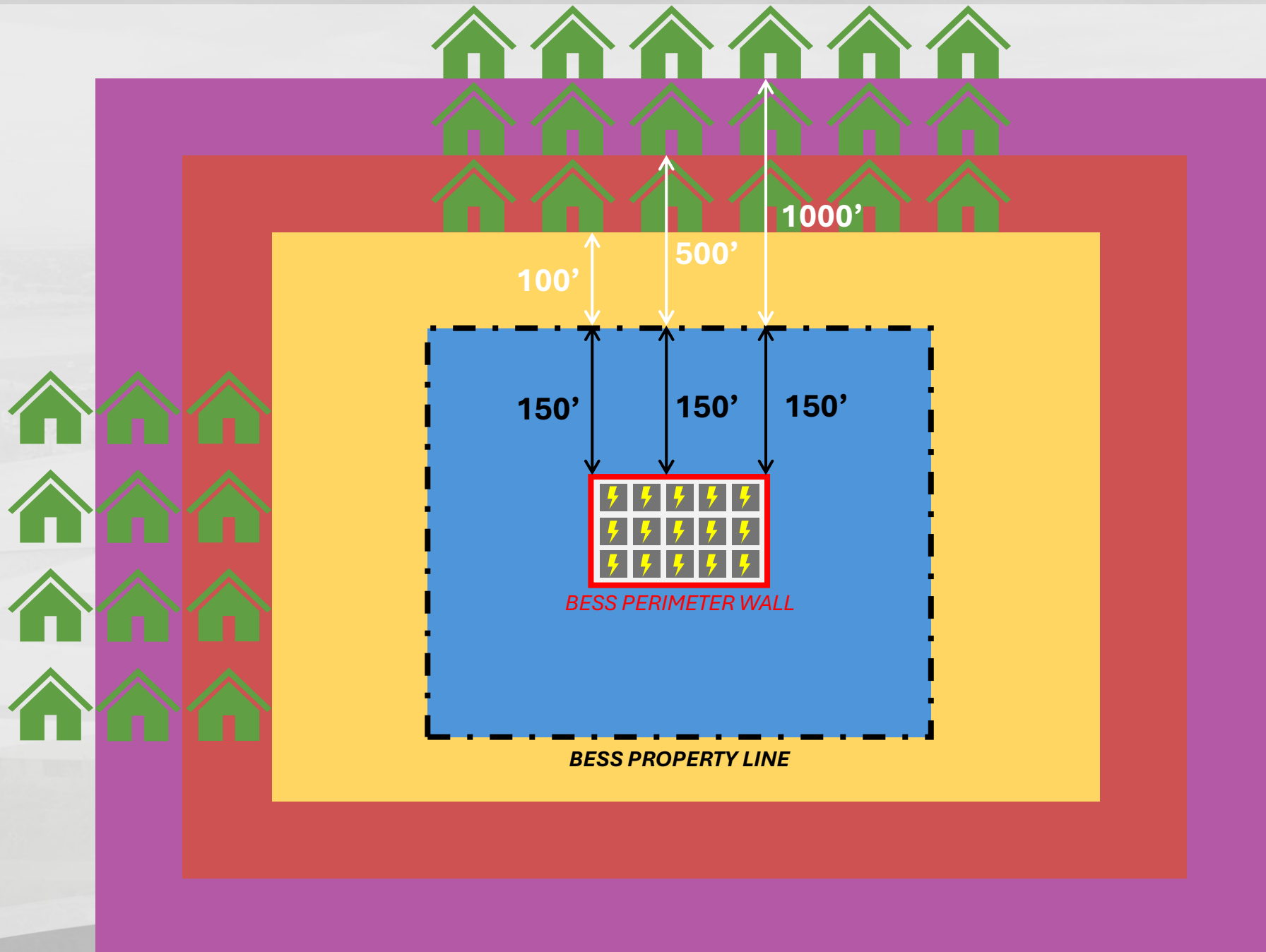
500-Feet from Property Line



1000-Feet from Property Line







SETBACK EXHIBIT

Outreach

- **Citizen Participation Meeting (2 meetings)**
 - January 30, 2025
 - City Hall
 - 16 attendees
 - January 7, 2026
 - City Hall
 - 15 attendees
- **Advertised according to the Surprise Land Development Ordinance (LDO)**

Motions

I move to recommend approval of the Zoning Text Amendment relating to BESS, Case FS23-1041 to Mayor and City Council, to include a separation distance of 1,000 feet.

OR

I move to recommend approval of the Zoning Text Amendment relating to BESS, Case FS23-1041 to Mayor and City Council, to include a separation distance of 500 feet.

OR

I move to recommend approval of the Zoning Text Amendment relating to BESS, Case FS23-1041 to Mayor and City Council, to include a separation distance of 100 feet.

OR

I move to deny FS23-1041 Battery Energy Storage System (BESS) Zoning Text Amendment. [this option denies the entirety of the application for the Zoning Text Amendment]

Questions or Comments?



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