

From: [Tara Adams](#)
To: [Michelle Anderson](#)
Cc: [Joe Sanford](#); [ClerkBoards](#); [Wade Carner](#)
Subject: Re: ZC26-2 — Public Comment Submission and Request to Include Filed Appeal Record — September 3, 2026
Date: Wednesday, August 26, 2026 2:12:34 PM
Attachments: [image.png](#)

Hello Michelle,

Thank you for your email. We are in receipt of your request and will add all documents related to the appeal as outlined below to the September 3rd Board of County Commissioners agenda packet. Once Mr. Carner submits his letter, we will include that as well.

Thank you and have a great day.

Kind Regards,

Tara Adams

Deputy Clerk to the Board
155 N. Taylor St., Suite 110
Fallon, NV 89406
Phone: 775-423-6028 x1508
Fax: 775-423-7069
Email: ClerkBoards@churchillcountynv.gov
Website: www.churchillcountynv.gov



From: Michelle Anderson <mlanderson89506@gmail.com>
Sent: Wednesday, August 26, 2026 11:49 AM
To: ClerkBoards <ClerkBoards@churchillcountynv.gov>
Cc: commissioners@churchillcountynv.com <commissioners@churchillcountynv.com>; Joe Sanford <joe.sanford@churchillcountynv.gov>
Subject: ZC26-2 — Public Comment Submission and Request to Include Filed Appeal Record — September 3, 2026

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Hi Tara,

I am writing to formally submit this request as public comment regarding ZC26-2, APN 004-431-44, for the September 3, 2026 Board of County Commissioners meeting. On August 20, 2026, I filed with the Churchill County Clerk/Treasurer my completed

administrative appeal concerning the Planning Commission's August 12 action on ZC26-2, together with the complete supporting exhibit record. I returned on August 21 and paid the \$750 filing fee. The final appeal, Exhibit Index, Exhibits 1–12, and payment receipt total approximately 322 pages and are already in the County's possession.

County Attorney Wade Carner has since informed me that the County's position is that the Planning Commission's August 12 action was a recommendation rather than an appealable decision and that my filing therefore will not be processed as an administrative appeal. He has advised that he will provide me with a written letter explaining the County's determination. Because these materials are already in the County's possession, rather than retransmitting approximately 322 pages by email, I am expressly requesting that the County include the complete appeal and supporting record already submitted to the Clerk as public comment for ZC26-2 for the September 3 meeting.

Specifically, please include as public comment and as part of the record provided to the Board: My complete August 20, 2026 filed appeal concerning ZC26-2;

The Exhibit Index and Exhibits 1–12 submitted with the appeal;

A copy of the receipt documenting payment of the \$750 appeal fee on August 21, 2026; and County Attorney Wade Carner's written letter explaining the County's determination regarding my administrative appeal, once that letter is issued.

I respectfully request that all of these materials be maintained together and provided in their entirety to each member of the Board of County Commissioners as public comment and supporting evidence regarding ZC26-2 before the Board considers and takes final action on the zone change.

I am making this request so there is no ambiguity that the substantive objections and supporting evidence contained in my filed appeal are being affirmatively submitted for consideration by the Board in connection with its September 3 decision on ZC26-2, regardless of the County's determination regarding whether the August 12 Planning Commission recommendation was administratively appealable.

Please confirm in writing that this request has been received and that the complete approximately 322-page filing already in the County's possession, together with County Attorney Carner's forthcoming letter, will be included as public comment for ZC26-2 and made part of the September 3 meeting record.

Thank you,

Michelle Anderson

From: Michelle Anderson
To: [Wade Carner](#)
Cc: [Joe Sanford](#); [ClerkBoards](#); [Myles Getto](#); [Matt Hyde](#)
Subject: Subject: Follow-Up — Written Determination Regarding ZC26-2 Appeal
Date: Thursday, August 27, 2026 10:01:41 AM

Caution: This email originated from outside of the Churchill County organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. When in doubt, contact your IT Department.

Hi Wade,

I am following up regarding the written determination concerning my August 20, 2026 filing of the administrative appeal for ZC26-2.

During our conversation on August 26, you advised me that the County would not process the filing as an administrative appeal because the Planning Commission's August 12 action was a recommendation rather than an appealable decision. You stated that you had already prepared a letter explaining the County's determination and would email it to me that day. At my request, you also agreed that the written response would identify the applicable County Code supporting that determination.

When I had not received the letter, I stopped by the County offices again today, August 27, to follow up. I was advised that the letter had been mailed, and you indicated through Tara that you would also email me a copy immediately. As of the time of this email, I still have not received the electronic copy.

Please email me the letter at your earliest convenience. Because this determination concerns the procedural rights associated with ZC26-2 and the matter is proceeding before the Board of County Commissioners, I would like the opportunity to promptly review the County's written determination and the legal authority supporting it.

Thank you,

Michelle Anderson



CHURCHILL COUNTY CLERK/TREASURER
155 N. Taylor Street #110
FALLON NEVADA 89406
775-423-6028

Receipt Number: R00039569

Cashier Name: Linda Rothery

Terminal Number: 5

Receipt Date: 8/21/2026 10:17:37 AM

Tran. Code: PLANNING COMM APPEAL - PLANNING COMM APPE Name: MICHELLE ANDERSON APPEAL PLANNING COMMISSI \$750.00
PLANNING COMM APPEALS... \$750.00

Payment Method: Check

Reference: #148

Total Amount Applied: \$750.00

Amount: \$750.00

Total Payment Received: \$750.00

Change: \$0.00

GL Distribution:	Account Number	Account Name	Amount
	100-000-33410	PLANNING COMM APPEAL FEE	750.00
		Total Distribution Amount:	750.00

ARTHUR E. MALLORY
DISTRICT ATTORNEY



Fallon (775) 423-6561
Fax (775) 423-6528
E-mail: amallory@churchillda.org

**OFFICE OF THE DISTRICT ATTORNEY
OF CHURCHILL COUNTY**

August 26, 2026

Michelle Anderson
3355 Beverly Dr.
Fallon, NV 89406

RE: Appeal of Planning Commission Recommendation

Dear Ms. Anderson,

We have received your Appeal related to the Planning Commission Recommendation to approve the Zone Amendment Application ZC26-2. As we discussed when you came to file your appeal, the recommendation by the Planning Commission is not a final action subject to appeal under County Code. Churchill County Code Article 16.08.030(B)(4-5) applies, and differentiates between final actions and recommendations:

4. On matters where the commission takes final action, the proponent, any aggrieved party, or member of the board may appeal the decision to the board.
5. On matters where the commission makes a recommendation to the board, the board by majority vote may affirm, deny, or return the recommendation to the commission for further consideration of any proposed recommendations.

Article 16.08.050(F) then describes the process for filing an appeal when allowed. In this case, you are attempting to appeal a recommendation to the Board of County Commissioners. This is not a final action which is subject to appeal. Therefore, your appeal is hereby rejected, and your filing fee is being returned.

We appreciate your attention to these important matters and encourage you to provide your comments and concerns to the Board of County Commissioners when this matter is heard at their regular meeting on September 3, 2026.

Sincerely,

A handwritten signature in blue ink, appearing to read "Wade Carner", is written over a horizontal line.

Wade Carner
Chief Civil Deputy District Attorney

Churchill County is an equal opportunity provider and employer.

165 NORTH ADA STREET. FALLON, NEVADA 89406. (775) 423-6561

RECEIVED

AUG 20 2026

CHURCHILL COUNTY
CLERK/TREASURER

Date received: 8-20-2026

Date of hearing: _____

Filing fee paid: To Be Paid

8-25-2026

Tara's Return

Received

check #: 148

8-21-2026

Churchill County Appeal Application

On a decision by the **Churchill County Planning Commission**

Appeal of Planning Commission Decision

Churchill County Consolidated Code 16.08.050.4(F)4(a) Time Limit for Filing: Any decision of the planning commission may be appealed by the applicant, a protestant or by the district attorney's office if it is in the opinion of said party that any application was improperly granted. An appeal of the planning commission decision must be submitted in writing to the board of county commissioners within ten (10) days after the planning commission has rendered its decision. If no appeal is received by the board of county commissioners within the time allowed, such decision may not be appealed.

Churchill County Consolidated Code 16.08.050.4(F)4(b) Appeal Application: All appeals shall be filed in writing accompanied with a filing fee, by filing a signed written notice of appeal and application stating therein **the reasons** why the decision of the planning commission should be amended, modified or reversed.

The appeal application shall specify the project or decision for which the appeal is being requested. The application shall indicate which aspects of the decision are being appealed. The appeal application shall provide the necessary facts or other information that support the appellant's contention that the commission erred in its consideration or findings supporting its decision.

Applicant's Name: Michelle Anderson

Applicant's Address: 3355 Beverly Drive

Fallon, NV 89406

Decision Being Appealed: ZC26-2 - APN 004-431-44, RR-20 to I-3

Planning Commission recommendation to approve ZC26-2, including its determination that the findings required by Churchill County Code 16.08.060(E) were satisfied.

Date Decision Was Made: August 12, 2026

Reason why the decision or recommendation of the planning commission should be amended, modified or reversed. Please attach any supporting documentation you believe will support your appeal.

I appeal the Planning Commission's recommendation to approve ZC26-2 and its determination that the required findings under Churchill County Code 16.08.060(E) were satisfied.

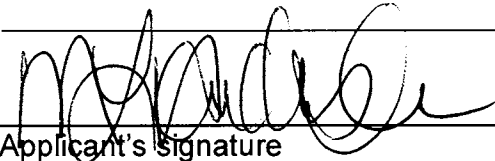
The applicant bears the burden of providing sufficient facts and information to support the required findings. This appeal challenges whether that burden was met and whether substantial evidence supported findings concerning Master Plan conformity, compatibility, adequate services and infrastructure, and impacts to public services, public health, safety and welfare.

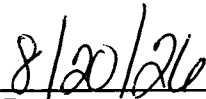
Material issues relevant to these required findings were raised both in written public comment and verbally during the public hearing, but were deferred to future project/SUP review or were not substantively addressed before the Commission nevertheless determined that the required findings were satisfied and recommended approval.

This appeal does not contend that final engineering or SUP-level plans were required at rezoning. It challenges whether sufficient factual evidence existed to make the findings required at the rezoning stage.

See the attached Statement of Grounds for Appeal and Supporting Evidence, incorporated herein by reference, for the specific grounds, facts, evidence and legal authorities supporting this appeal.

I respectfully request that the Board reverse the recommendation and deny ZC26-2 on the present record or, alternatively, remand the matter for further consideration and development of an adequate evidentiary record.


Applicant's Signature


Date

I. INTRODUCTION AND DECISION APPEALED

ZC26-2 concerns APN 004-431-44, approximately 218.57 acres, and requests a zoning map amendment from RR-20 (Rural Resource) to I-3 (Heavy Industrial). The applicant identified destructive battery testing as the intended use necessitating the requested change to I-3.

On August 12, 2026, the Churchill County Planning Commission recommended approval of ZC26-2 and determined that the findings required under Churchill County Code §16.08.060(E) were satisfied.

This appeal challenges whether the applicant met its burden and whether substantial evidence supported the required findings concerning Master Plan conformity, compatibility, adequate services and infrastructure, public services, and public health, safety and welfare. Material issues relevant to those findings were raised both in written public comment and verbally during the public hearing; however, evidence addressing material factual gaps identified by those issues was not provided before the Planning Commission made its recommendation and affirmative findings.

This appeal does not contend that final engineering, operational plans, or SUP-level details were required before rezoning. It challenges whether sufficient factual evidence existed to make the findings required at the rezoning stage where information material to those findings was deferred to later review.

This appeal does not ask the Board to presume that destructive battery testing is unsafe or that the proposed project cannot ultimately satisfy applicable requirements; it asks whether the evidentiary record was sufficient to support the affirmative findings required for the zoning amendment when those findings were made.

II. PROCEDURAL AND FACTUAL BACKGROUND

1. Proposed Zoning Amendment

ZC26-2 requests amendment of the zoning designation of approximately **218.57 acres**, identified as **APN 004-431-44**, from **RR-20 (Rural Resource District)** to **I-3 (Heavy Industrial District)**.

The requested amendment represents a significant change in the permitted intensity and character of land uses available on the property. The Planning Commission considered ZC26-2 and recommended approval after determining that the required findings under CCC §16.08.060(E) had been satisfied.

2. Stated Purpose of the Zoning Amendment

The applicant identified **destructive battery testing** as an intended use of the property and represented that the existing RR-20 zoning does not permit that use. The requested I-3 designation would allow the applicant to pursue that use subject to subsequent County approvals, including SUP review.

The stated use is material because it was not speculative, attributed to the applicant by members of the public, or introduced solely in opposition to the zoning amendment. **The applicant itself identified destructive battery testing as the reason the requested zoning change was necessary.**

Accordingly, this appeal does not contend that the Planning Commission was required to prematurely adjudicate a future SUP. It contends that the characteristics of the stated use remained relevant to the extent necessary to evaluate and support findings that County Code required the Planning Commission to make at the rezoning stage.

3. Staff Recommendation and Master Plan Analysis

County staff recommended approval and presented the Planning Commission with findings under CCC §16.08.060(E), including findings concerning Master Plan conformity, compatibility with surrounding uses, public services and facilities, and public health, safety and welfare.

In supporting approval, staff relied substantially upon the property's location within an area designated for industrial development by the Churchill County Master Plan. Staff also identified selected Master Plan policies supporting industrial development and relied upon factors including the property's remoteness, separation from residential zoning and existing development, nearby industrial-type activities, and access from U.S. Highway 95.

This appeal does **not** dispute that the Industrial Master Plan designation and the policies identified by staff constitute evidence relevant to the County's analysis. Nor does this appeal contend that industrial development is categorically inappropriate within an area designated for industrial development.

Rather, the appeal challenges whether the required finding of substantial Master Plan compliance was adequately supported when the analysis focused substantially upon the Industrial land-use designation and selected supporting policies without demonstrating meaningful consideration of other directly applicable Master Plan goals and policies.

Those policies include provisions addressing sustainability; environmental and natural-resource protection; water resources and dependable water supply; infrastructure and efficient service provision; public health and safety; and whether development is beneficial to Churchill County.

The Master Plan directs that development proposals be considered in relation to the **Master Plan as a whole**. Accordingly, consistency with the Industrial land-use designation is relevant to the analysis, but the appeal contends that the designation alone does not resolve whether ZC26-2 substantially complies with and supports the goals and policies of the Master Plan as required by the County's rezoning findings.

Stated another way, **the Industrial designation addresses where industrial development may be appropriate; it does not eliminate the obligation to determine whether a particular zoning amendment satisfies the other applicable goals and policies governing development within that area.**

4. Applicant's Representations Concerning Services and Infrastructure

In addressing services and infrastructure, the applicant characterized the site's utility demands as minimal and indicated that initial utilities would be temporary, with permanent **power, water and septic** infrastructure to come later.

The materials reviewed in connection with ZC26-2 did not identify quantified electrical demand, quantified water demand, a permanent water source, permanent electrical-service capacity, anticipated wastewater generation, or comparable information establishing the anticipated infrastructure requirements of the stated destructive-battery-testing use.

The subject property is located within Carson Desert Hydrographic Basin 101, as identified by the Nevada Division of Water Resources Water Rights GIS.

Again, this appeal does not contend that final infrastructure engineering or construction plans were required at rezoning.

The issue is whether the applicant provided sufficient factual information to satisfy its burden and permit the Planning Commission to make the infrastructure- and public-service-related findings required at the zoning stage.

5. Written Public Comment and Preservation of Material Issues

Before the Planning Commission considered and voted upon ZC26-2, written public comment raised specific questions concerning the evidentiary basis for the required findings.

Those issues included, among others, the nature and scale of the proposed destructive battery testing; water and electrical demand; infrastructure requirements; emergency-response capability; fire and hazardous-material risks; potential air and environmental impacts, **including containment and management of potentially impacted water or runoff**; compatibility with surrounding land uses; and the evidence supporting findings concerning public health, safety and welfare.

The written submission specifically requested that the Planning Commission determine whether the applicant had met its burden of proof and identify the evidence supporting the findings required for approval.

Accordingly, these issues were placed before the Planning Commission **before its recommendation was made.**

6. Oral Public Comment and Opportunity to Address the Issues

During the public hearing, material issues previously raised in writing were again raised verbally.

Among the questions presented were what type of destructive battery testing was contemplated and whether local emergency services possessed the staffing, **specialized training**, equipment and resources necessary to respond to a significant battery-related incident.

The applicant's representative participated in the hearing remotely and indicated availability to answer questions. Nevertheless, substantive answers concerning several of the issues raised in written and oral public comment were not obtained from the applicant before the Planning Commission made its findings and voted to recommend approval.

This fact is relevant not because the Planning Commission was required to resolve every question posed during public comment, but because several unanswered questions directly concerned subjects implicated by findings the Commission was required to make before recommending the zoning amendment.

7. Deferral to Subsequent Project and SUP Review

During Commission discussion, staff and Planning Commission members explained that detailed questions concerning the proposed use would be addressed during later project-specific and SUP proceedings.

The hearing record reflects the position that the matter presently before the Commission concerned the zoning amendment rather than approval of the ultimate project.

This appeal acknowledges that distinction.

However, it challenges the extent to which that distinction was used to defer consideration of information relevant to findings that nevertheless had to be made during the zoning proceeding itself.

The appeal therefore distinguishes between two categories of information:

Final engineering, detailed project design, construction plans, and SUP-specific conditions, which may appropriately be considered during subsequent review; and

Facts reasonably necessary to substantiate the findings required for approval of the zoning amendment itself, which the appeal contends must be supported by sufficient evidence when the zoning findings are made.

The Planning Commission nevertheless determined that the required findings were satisfied and recommended approval of ZC26-2.

8. Planning Commission Recommendation and Present Appeal

Following the public hearing and Commission discussion, the Planning Commission voted to recommend approval of ZC26-2 and determined that the criteria required under CCC §16.08.060(E) had been satisfied.

This appeal timely challenges both the recommendation and the sufficiency of the findings supporting that recommendation pursuant to CCC §16.08.050.4(F)4.

The appeal does not ask the Board to presume that the proposed project will create an adverse impact. Rather, it asks the Board to determine **whether the applicant carried its burden and whether substantial evidence supported the affirmative findings necessary to recommend the zoning amendment despite material evidentiary questions raised before the decision.**

For the reasons set forth below, Appellant respectfully contends that the record was insufficient to support several required findings and that the Planning Commission's recommendation should therefore be reversed or, alternatively, the matter should be remanded for further consideration and development of an adequate evidentiary record.

III. GOVERNING STANDARDS AND APPLICANT'S BURDEN OF PROOF

This appeal is governed by Churchill County's requirements for amendments to the zoning map, the evidentiary burden imposed upon an applicant seeking such an amendment, the Churchill County Master Plan, and applicable Nevada law governing local land-use decisions.

CCC §16.08.060(E) establishes both **evidentiary requirements applicable to a zoning-map amendment** and **findings of fact the Planning Commission must make when forwarding a recommendation for approval to the Board of County Commissioners**.

These requirements provide the framework for evaluating whether the Planning Commission's recommendation concerning ZC26-2 was adequately supported.

A. The Applicant Bears the Burden of Proof

Churchill County's current zoning-amendment materials implementing CCC §16.08.060(E) expressly provide that the **applicant bears the burden of proof to provide facts supporting the proposed amendment** and must provide adequate information in the application and site plan to substantiate the required findings.

This allocation of the burden is fundamental to this appeal.

Members of the public opposing or questioning a requested zoning amendment are not required to prove that a proposed use **will** cause an adverse impact before the County may consider whether the required findings have been established. Rather, the applicant requesting the zoning amendment bears the responsibility of providing facts and information sufficient to substantiate the affirmative findings necessary for approval.

Accordingly, where material uncertainty exists concerning a subject relevant to a required finding, the appropriate inquiry is not whether members of the public conclusively established that an adverse consequence will occur.

The appropriate inquiry is:

Did the applicant provide adequate facts and information to satisfy its burden and permit the County to make the required affirmative finding based upon substantial evidence?

This distinction is central to each Ground presented in this appeal.

B. CCC §16.08.060(E)(1) Requires an Evidentiary Showing Supporting the Requested Zoning Amendment

CCC §16.08.060(E)(1), as implemented in Churchill County's current zoning-amendment application and reflected in the ZC26-2 staff report, requires evidence concerning the physical use of land and zoning existing in the general vicinity during the preceding five-year period and requires the applicant to address matters including:

1. how growth or other development factors in the community support the requested change in land use;

2. whether the change in land use represents orderly development and whether adequate services and infrastructure to support the proposed land use are available in the area;
3. whether the requested zoning change provides for an appropriate use of the land;
4. whether the proposed zoning is in substantial conformance with the Churchill County Master Plan and other adopted plans and policies; and
5. whether the **proposed zoning and project** are sensitive to and compatible with the use and development of adjacent properties.

These requirements demonstrate that the zoning-amendment inquiry extends beyond whether the requested zoning classification corresponds geographically with a Master Plan land-use designation.

The applicant must provide facts addressing the consequences and appropriateness of the requested change, including infrastructure and services, Master Plan conformity, compatibility, and the proposed project to the extent expressly contemplated by the County's zoning criteria.

C. Services and Infrastructure Are Expressly Part of the Rezoning Inquiry

Among the evidentiary matters identified under CCC §16.08.060(E)(1) is whether:

“The change in land use represents orderly development and that adequate services and infrastructure to support the proposed land use are available in the area.”

The County's application then directs the applicant to describe why adequate services and infrastructure exist to support the requested change.

For ZC26-2, the applicant responded:

“The remote nature of the site will require minimal, isolated utility demands. Initial utilities for the site will be temporary to start with permanent power, water, and septic to come later.”

This requirement is directly relevant to ZC26-2 because the applicant affirmatively characterized anticipated utility demands as minimal while indicating that permanent **power, water and septic** would be provided later.

Appellant does not interpret the infrastructure requirement as demanding completed utility construction, final engineering plans, or SUP-level infrastructure design before rezoning.

The appeal instead contends that the requirement must be given substantive effect. Where infrastructure adequacy is expressly part of the zoning-amendment inquiry and the applicant bears the burden of providing adequate information, sufficient facts must exist to permit meaningful evaluation of whether services and infrastructure can support the proposed land use when the zoning determination is made.

D. The County's Rezoning Criteria Expressly Consider Both the Proposed Zoning and the Proposed Project

CCC §16.08.060(E)(1), as implemented through the County's current zoning-amendment materials, requires consideration of whether the **“proposed zoning and project”** are sensitive to and compatible with the use and development of adjacent properties.

The County further instructs an applicant to examine the Code's Use Table and consider the possible uses that would become available within the requested zoning district in the future.

This language is important to the present appeal.

Appellant does not contend that the Planning Commission was required to conduct a future SUP proceeding during the zoning hearing or determine the final design and operating conditions of a project that had not yet reached that stage.

However, the County's own rezoning criteria demonstrate that the stated project is not categorically irrelevant merely because final project approval occurs later.

Here, the applicant expressly identified **destructive battery testing** as the use necessitating the requested change from RR-20 to I-3. The County's ZC26-2 staff report likewise states that the applicant intends to establish destructive battery testing because RR-20 does not permit the use while I-3 permits an Explosive or Combustible Materials Testing use with an approved Special Use Permit.

Accordingly, characteristics of that stated use were relevant at least to the extent reasonably necessary to evaluate the evidentiary criteria and findings required at the zoning-amendment stage.

The permanent nature of the zoning amendment also makes the County's instruction to consider other uses permitted within the requested district relevant. The zoning decision does not merely determine whether a particular applicant may pursue a particular project; it changes the zoning classification and the range of uses potentially available to the property unless and until the zoning is subsequently changed.

E. CCC §16.08.060(E)(2) Requires the Planning Commission to Make Findings of Fact Before Recommending Approval

Separate from the applicant's evidentiary showing under subsection (E)(1), CCC §16.08.060(E)(2) requires the Planning Commission, when forwarding a recommendation for approval of a zoning-map amendment, to make specified **findings of fact**.

The County's ZC26-2 staff report identifies the required findings as follows:

- a. "That the proposed amendment is in substantial compliance with and supports the goals and policies of the master plan;"**
- b. "That the proposed amendment will provide for land uses compatible with existing adjacent land uses and will not have detrimental impacts to other properties in the vicinity;"**
- c. "That the proposed amendment will not negatively impact existing or planned public services or facilities and will not adversely impact the public health, safety and welfare."**

The distinction between subsections (E)(1) and (E)(2) is important:

Subsection (E)(1) identifies evidence and considerations supporting the zoning amendment; subsection (E)(2) requires the Planning Commission to make affirmative findings of fact before forwarding a recommendation for approval.

The ZC26-2 staff report expressly recommended that the Commission find the criteria in CCC §16.08.060(E) had been met, and the Planning Commission proceeded upon that recommendation.

Accordingly, the evidentiary showing and required findings must be considered together. The applicant bears the burden of providing facts supporting the requested amendment, and those facts must provide an adequate evidentiary basis for the Planning Commission's required findings.

F. Master Plan Conformity Requires Consideration Beyond the Land-Use Designation Alone

The zoning-amendment criteria require substantial conformance with the Churchill County Master Plan and other adopted plans and policies, while the Planning Commission's findings require substantial compliance with and support of the Master Plan's **goals and policies**.

The Master Plan land-use designation is therefore an important component of the analysis, but it is not necessarily the entirety of the analysis.

The Churchill County Master Plan directs that development proposals be considered in relation to the **Master Plan as a whole**. Its goals and policies address not only the geographic location of industrial development, but also matters including sustainability, environmental impact and natural-resource protection, water resources, public health and safety, infrastructure and efficient service provision, compatibility, and public benefit.

Accordingly, the Industrial designation of the subject property constitutes evidence favoring the requested amendment. Appellant does not dispute that fact.

The issue is whether that designation, together with the other evidence presented, was sufficient to establish substantial conformity with the Master Plan when other directly applicable goals and policies were not meaningfully evaluated against sufficient information concerning the development facilitated by the requested amendment.

G. Required Findings Must Be Supported by Substantial Evidence

Nevada courts generally accord substantial deference to local governmental land-use decisions and do not substitute their judgment for that of the local decision-making body when a decision is supported by substantial evidence.

In ***Reno Real Estate Development, LLC v. Scenic Nevada, Inc.***, 141 Nev. Adv. Op. 48 (2025), the Nevada Supreme Court reaffirmed the deferential standard applicable to municipal land-use decisions and reiterated the substantial-evidence inquiry. The Court's formulation is consistent with Nevada's longstanding definition of substantial evidence as evidence **"which a reasonable mind might accept as adequate to support a conclusion."**

The Nevada Supreme Court's published decisions repeatedly use that definition of substantial evidence.

That deferential standard does not eliminate the requirement for an adequate evidentiary basis. Rather, it identifies the evidentiary threshold upon which deference rests.

The existence of some evidence favoring an application therefore does not necessarily end the inquiry where the governing law requires several separate affirmative conclusions.

The relevant question is whether a reasonable mind could accept the evidence in the record as adequate to support the **particular finding being made**.

This appeal therefore does not ask the Board to substitute speculation against the applicant for speculation in favor of the applicant.

It asks the Board to examine the evidence supporting each required finding and determine whether the applicant's evidentiary burden was met and whether substantial evidence existed to support the conclusions reached.

H. Nevada Law Distinguishes Between Deferring Final Development Details and Deferring Evidence Necessary to a Presently Required Finding

The Nevada Supreme Court's decision in *City of Reno v. Citizens for Cold Springs*, 126 Nev. 263, 236 P.3d 10 (2010) (**Exhibit 11**), is relevant to this distinction.

Cold Springs involved land-use and zoning approvals facilitating future development. Reno's applicable ordinance required a finding concerning adequate services and infrastructure. Reno argued, in substance, that detailed infrastructure matters could be addressed during subsequent development proceedings.

The Nevada Supreme Court recognized that the zoning stage did **not** require complete, all-inclusive development plans. Detailed engineering and other later-stage development requirements could appropriately occur after zoning.

The Court nevertheless rejected the proposition that the ability to defer final development details permitted the governmental body to defer the factual basis necessary to make an infrastructure finding required at the zoning stage.

The Court required sufficient information concerning the infrastructure needs associated with the development facilitated by the zoning decision and how those needs would be addressed, rather than merely postponing the inquiry until future development review.

Appellant recognizes that *Cold Springs* interpreted the City of Reno's ordinance, not Churchill County Code, and does not contend that the two ordinances are identical.

The Nevada Supreme Court subsequently reinforced that evidentiary principle in *Eureka County v. State Engineer*, 131 Nev. 846, 359 P.3d 1114 (2015) (**Exhibit 12**). Although *Eureka County* arose in the different administrative context of water-right permitting, the Court held that the State Engineer's decision had to be supported by substantial evidence **in the record before him**, rather than relying upon the expectation that mitigation could later be developed. The Nevada Supreme Court later summarized *Eureka County* as holding that the relevant decisions were unsupported because the required substantial evidence was not present in the record when the decision was made.

Appellant does not contend that *Eureka County*'s water-right permitting requirements are identical to Churchill County's rezoning requirements.

The relevance of *Cold Springs* and *Eureka County* is narrower:

Nevada law recognizes that where governing law requires an affirmative finding in the present proceeding, the evidentiary basis necessary to support that finding cannot be supplied merely by the existence of a later review process. Final engineering and other properly deferred details may await later proceedings; substantial evidence supporting a presently required finding must exist when that finding is made.

That distinction is directly implicated where material questions concerning ZC26-2 were characterized during the Planning Commission hearing as matters for future project/SUP review while the Commission nevertheless made the affirmative findings necessary to recommend the zoning amendment.

The application of these authorities to the specific hearing record is addressed more fully in **Ground II** below.

I. The Board's Review Is Not Limited to the Planning Commission Record

Churchill County's appeal procedure provides that the Board of County Commissioners is not limited to the record before the Planning Commission when considering an appeal.

CCC §16.08.050.4(F)4(f) provides:

“To ensure that all parties have access to their elected officials, the board of county commissioners shall not be limited to the record of the planning commission.”

“The board of county commissioners shall consider only the issues raised before the planning commission, however, all relevant evidence pertaining thereto which is necessary to render a decision based on substantial evidence shall also be considered.”

This provision is particularly relevant because the principal issues presented by this appeal were raised before the Planning Commission **both in written public comment and verbally during the public hearing.**

Those issues included infrastructure and utility requirements, water and power, emergency-response capability, fire and hazardous-material risks, potential environmental and air impacts, compatibility, public health and safety, Master Plan conformity, and the sufficiency of the evidence supporting the required findings.

Accordingly, supplemental evidence submitted with this appeal concerning those matters does not create an entirely new basis of opposition after the Planning Commission's recommendation. It supplements issues already placed before the Commission before it acted.

The supplemental evidence is not offered as proof that the identified adverse consequences will occur. It is offered as evidence relevant to the materiality of factual issues raised before the Planning Commission and to whether the required findings were adequately supported.

J. Standard Applied to the Grounds That Follow

Taken together, these provisions establish the framework for this appeal.

Appellant does not ask the Board to determine prematurely whether Rivian's eventual project should receive an SUP, nor does Appellant contend that every engineering or operational detail of a future facility should have been established before rezoning.

The Board is instead respectfully asked to determine:

Whether, at the time the Planning Commission recommended approval of ZC26-2, the applicant had satisfied its burden of providing adequate facts and information and whether substantial evidence supported the affirmative findings required for the zoning amendment, including Master Plan conformity, compatibility, adequate services and infrastructure, impacts upon public services and facilities, and public health, safety and welfare.

Where information material to those required determinations was deferred to subsequent proceedings, the Board is further asked to determine whether the findings could properly be made before sufficient information existed to support them.

GROUND I — THE REQUIRED FINDINGS WERE NOT SUPPORTED BY SUBSTANTIAL EVIDENCE

A. The Planning Commission Made Affirmative Findings Despite Material Gaps in the Evidentiary Record

The Planning Commission recommended approval of ZC26-2 after determining that the findings required under CCC §16.08.060(E) had been satisfied.

As established in Section III, the applicant bears the burden of providing adequate facts and information supporting the requested zoning amendment. The issue presented by this Ground is whether the evidence before the Planning Commission was sufficient to support the affirmative findings it made.

Appellant does not contend that the record contained no evidence supporting ZC26-2. The property's Industrial Master Plan designation, its distance from existing residential development, surrounding land uses, access to U.S. Highway 95, and other facts identified by staff constitute evidence relevant to the requested amendment.

The existence of some evidence favoring rezoning, however, does not necessarily establish every required criterion and finding. **Material factual information concerning the proposed land use, infrastructure and services, compatibility, public services and facilities, and public health, safety and welfare remained unresolved or unsupported by sufficient evidence when the Planning Commission determined that the required findings were satisfied.**

The question presented is therefore not whether some evidence favored ZC26-2, but whether **substantial evidence supported each affirmative determination necessary to recommend approval.**

B. The Applicant Identified a Specific Proposed Use, but Material Characteristics of That Use Were Not Established

The applicant did not seek I-3 zoning for an unidentified or purely hypothetical future industrial use. The application expressly identified **destructive battery testing** as the intended use necessitating the zoning change.

The applicant represented that the existing RR-20 zoning does not permit destructive battery testing and relied upon the proposed use in explaining why the requested I-3 designation was appropriate.

The proposed use therefore formed part of the factual basis for the requested zoning amendment.

Nevertheless, the record before the Planning Commission did not establish material characteristics of that proposed use, including its anticipated scale, the nature or extent of destructive testing contemplated, anticipated battery quantities or types, quantified electrical demand, quantified water demand, permanent utility requirements, or comparable operational information relevant to the County's zoning criteria.

Appellant does not contend that each of these items independently constitutes a mandatory application requirement or that final project design was required before rezoning.

Rather, the absence of this information becomes material where the County was nevertheless required to evaluate matters such as infrastructure adequacy, compatibility, public-service impacts, and public health, safety and welfare.

C. The Nature and Scale of the Proposed Use Determine What Evidence Is Material to the Required Findings

The amount and type of information reasonably necessary to substantiate a zoning determination necessarily depend upon the nature and characteristics of the land use for which the zoning amendment is sought.

A proposed use with minimal utility requirements, limited hazardous materials, and little potential demand upon emergency services may require comparatively limited information to substantiate findings concerning infrastructure, compatibility, public services, and public health and safety.

A proposed use involving materially different operational characteristics may require a correspondingly different factual showing before the same affirmative findings can reasonably be made.

Here, the applicant expressly identified **destructive battery testing** as the intended use necessitating the requested I-3 zoning. The relevant evidentiary inquiry therefore cannot reasonably be divorced from the nature and anticipated scale of the destructive testing contemplated.

“Destructive battery testing” describes a category of activity rather than a single uniform process. The information reasonably necessary to evaluate its potential demands and effects depends upon material variables including, as applicable:

- the types and chemistries of batteries involved;
- battery size, quantity and state of charge;
- the nature and frequency of destructive testing;
- whether testing intentionally induces thermal runaway, fire, rupture or other failure modes;
- the quantity and manner of batteries or potentially hazardous materials stored on site;
- containment and control methods;
- anticipated electrical and water requirements; and
- **the nature and extent of potential emergency-response demands, including whether the contemplated testing would require specialized training, procedures, equipment, personal protective equipment, hazardous-material response capabilities, or other resources for County staff and emergency responders.**

Emergency-response capability is particularly dependent upon the nature and scale of the testing contemplated. Without sufficient information concerning the batteries, testing methods, quantities, potential failure modes, and associated hazards, the County cannot meaningfully determine what emergency-response capabilities may be necessary, whether specialized training

or equipment would be required, or whether existing County resources are adequate to address those potential demands.

Appellant does not contend that every responder must receive project-specific training before a zoning amendment may be considered. Rather, the issue is whether sufficient information concerning the proposed use existed to permit the County to evaluate the nature of the potential demand upon public services and determine whether additional training, equipment, procedures, staffing, or other resources may reasonably be required.

Appellant does not contend that each of these variables constitutes an independent application requirement under CCC §16.08.060(E), nor that final operating protocols or engineering specifications were required before rezoning.

Rather, these variables demonstrate why the **nature and scale of the proposed use establish the factual context necessary to determine what evidence is material to the County's required findings.**

Without sufficient information identifying what “destructive battery testing” means in the context of the proposed facility, it is difficult to determine whether a particular concern is immaterial, adequately addressed, or requires additional factual development before an affirmative finding can reasonably be made.

Accordingly, the evidentiary showing necessary to substantiate the zoning findings should be informed by and reasonably proportional to the characteristics of the use relied upon to justify the requested amendment.

The applicant bears the burden of providing adequate facts supporting the amendment. Where the applicant identifies a particular proposed use as the basis for changing the property's zoning, sufficient information concerning that use must therefore exist to permit meaningful evaluation of those characteristics relevant to the required zoning determinations.

This does **not** shift SUP-level project review into the rezoning proceeding. It establishes only the factual context necessary to determine whether the applicant has provided enough information to substantiate the findings required at the rezoning stage.

D. Statements Concerning “Minimal” Utility Demand Were Not Supported by Quantified Information

The applicant characterized anticipated utility demand as “**minimal**,” while indicating that initial utilities would be temporary and permanent power, water and septic would come later.

The significance of that representation is heightened by the absence of sufficient information concerning the nature and scale of the destructive battery testing contemplated.

The record identified in the staff materials did not quantify anticipated electrical demand or water demand, establish the permanent water source or permanent electrical-service capacity, or quantify anticipated wastewater requirements.

Without first establishing the nature and approximate scale of the activity to be served, the factual basis for characterizing its anticipated utility requirements as “minimal” is unclear.

The issue is not whether those infrastructure systems had to be constructed before rezoning.

The issue is whether the applicant's characterization constituted sufficient evidence where the underlying anticipated demand had not been established and the permanent means of serving that demand remained undetermined.

A meaningful determination concerning infrastructure adequacy necessarily requires some factual basis concerning both sides of the comparison:

What services and infrastructure will the proposed land use reasonably require, and what services and infrastructure are available or reasonably capable of serving those requirements?

Without sufficient information concerning anticipated demand, a conclusion concerning adequacy risks depending upon the assumption that future requirements can be addressed later.

That issue is addressed further under **Ground II** and **Ground IV**.

E. Compatibility Could Not Be Evaluated Solely From Distance and Existing Zoning

Staff relied upon the property's remoteness, distance from residential zoning and existing development, surrounding industrial-type uses, and highway access in supporting compatibility.

Those considerations are relevant, and Appellant does not dispute them.

However, CCC §16.08.060(E)(1), as reflected in the County's zoning-amendment criteria, expressly requires consideration of whether the **proposed zoning and project** are sensitive to and compatible with the use and development of adjacent properties.

The County's application materials also direct consideration of the range of uses potentially available under the requested zoning classification.

Distance and existing land-use patterns therefore represent part of the compatibility inquiry, but they do not necessarily resolve it.

The relevance of distance depends in part upon the characteristics of the proposed activity and the nature and geographic reach of effects reasonably pertinent to compatibility. Likewise, the absence of nearby occupied residential development does not independently establish compatibility with all adjacent properties or uses.

Accordingly, the evidence concerning remoteness and separation favored the application but did not eliminate the need for sufficient information concerning the proposed zoning and proposed use to permit the compatibility determination required by County Code.

F. Material Public-Service and Public-Safety Questions Were Raised Before the Findings Were Made

Written public comment submitted before the hearing raised specific questions concerning emergency-response capability, fire and hazardous-material risks, potential air and environmental impacts, infrastructure, water and electrical demand, and public health and safety.

Those matters were again raised verbally during the public hearing.

Questions included the nature of the proposed destructive testing and whether local emergency-response agencies possessed the staffing, **specialized training, equipment, procedures and resources** necessary to respond to a significant battery-related incident.

These were not merely generalized expressions of opposition. They were questions directed toward the factual basis supporting findings the Planning Commission was being asked to make.

The applicant's representative participated remotely and indicated availability to answer questions. Nevertheless, substantive information concerning several of those matters was not obtained before the Planning Commission recommended approval.

The significance is not that the Planning Commission had an obligation to answer every question raised during public comment.

Rather:

Where a question identified missing information material to a required criterion or finding, the applicant's burden remained to provide adequate facts supporting that determination.

Uncertainty does not establish that ZC26-2 must permanently be denied.

But unresolved uncertainty also does not itself constitute affirmative evidence supporting a required finding.

G. Future Review Was Relied Upon to Address Material Information That Remained Unresolved

During discussion, several questions concerning the proposed use were characterized as matters that could be addressed during later project-specific or SUP proceedings.

The Planning Commission nevertheless proceeded to determine that the applicable zoning criteria and findings had been satisfied.

This creates a central evidentiary issue:

If the deferred information was unnecessary to the zoning findings, the record should identify what evidence independently supported those findings. If the information was necessary to those findings, deferring it until after rezoning left the present findings without the information necessary to substantiate them.

Appellant does not contend that every unanswered project question falls into the second category.

The Board is instead asked to distinguish carefully between detailed information appropriately reserved for subsequent project review and information reasonably necessary to support determinations expressly required at the zoning stage.

The legal significance of this distinction under ***City of Reno v. Citizens for Cold Springs*** is addressed specifically in **Ground II**.

H. The Applicant's Burden Cannot Be Shifted to Members of the Public

The applicant's evidentiary burden is particularly important when evaluating the issues raised during public comment.

Appellant does not bear the burden of proving that destructive battery testing will cause a fire, contaminate air or water, exceed local electrical capacity, adversely affect groundwater, overwhelm emergency services, or otherwise cause a particular adverse consequence.

Nor does the absence of public proof that such an event **will** occur establish the affirmative conclusion that it will not.

The relevant question under the County's zoning framework is whether the **applicant provided adequate facts supporting the requested amendment and the affirmative determinations necessary for approval.**

Accordingly:

An unanswered question concerning a material zoning criterion cannot properly be resolved against the public merely because the public cannot prove what the applicant has not disclosed or established.

Technical evidence submitted with this appeal concerning battery hazards, infrastructure, emergency response and related subjects is therefore not offered to establish that a particular adverse event will occur at the proposed facility.

It is offered, where applicable, to demonstrate **why particular characteristics of the proposed destructive battery testing are material variables that must be understood before certain affirmative zoning findings can reasonably be made.**

I. Evidence Supporting Some Findings Does Not Necessarily Support All Required Findings

The record contains legitimate evidence favoring ZC26-2.

The property is remote. It lies within an area designated for industrial development. Existing residential development is substantially separated from the site. Highway access exists. Other industrial-type activities occur within the broader area.

Those facts should be considered and weighed by the Board.

But evidence supporting the general appropriateness of industrial development at this location does not automatically establish:

- adequate services and infrastructure for the proposed land use;
- compatibility of the proposed zoning and project;
- substantial conformity with the Master Plan as a whole;
- absence of adverse impacts upon existing or planned public services or facilities; or
- absence of adverse impacts upon public health, safety and welfare.

Each required determination must have an adequate evidentiary basis.

The appeal therefore does not ask whether **some evidence favored rezoning**.

It asks whether substantial evidence supported the **specific affirmative determinations required to recommend this rezoning**.

J. Requested Determination Under Ground I

For the foregoing reasons, Appellant respectfully contends that the Planning Commission's recommendation was made without sufficient evidence to substantiate all criteria and findings required for approval of ZC26-2.

Appellant requests that the Board independently examine the evidentiary basis supporting each required determination rather than treating the Planning Commission's recommendation itself as evidence that the applicant's burden was satisfied.

Appellant respectfully requests that the Board determine that the present record did not contain substantial evidence sufficient to support each required affirmative finding and reverse the Planning Commission's recommendation. Alternatively, if the Board determines that additional evidence could cure the deficiencies identified herein, Appellant requests that the matter be remanded or continued for development and consideration of an adequate evidentiary record before the required findings are made.

GROUND II — MATERIAL INFORMATION NECESSARY TO THE REZONING DETERMINATION WAS IMPROPERLY DEFERRED TO FUTURE PROJECT AND SUP REVIEW

A. This Appeal Does Not Contend That SUP-Level Review Was Required at Rezoning

The distinction at the center of this Ground is narrow.

Appellant does not contend that the Planning Commission was required to conduct Rivian's future Special Use Permit proceeding during consideration of ZC26-2. Nor does Appellant contend that Rivian was required to provide final engineering drawings, final facility design, construction plans, final fire-suppression systems, or every operational detail of a proposed facility before seeking rezoning.

Those matters may properly be addressed at later stages of project review.

The issue is instead whether information necessary to evaluate matters expressly required at the **rezoning stage** could itself be postponed until those later proceedings while the Planning Commission nevertheless determined that the present zoning criteria and required findings had been satisfied.

That distinction is particularly important because CCC §16.08.060(E)(1) expressly requires an evidentiary showing concerning whether adequate services and infrastructure are available to support the proposed land use and whether the **“proposed zoning and project”** are compatible with adjacent properties.

B. The Applicant Relied Upon the Proposed Project to Establish the Need and Appropriateness of the Rezoning

The proposed project was not irrelevant to ZC26-2.

In addressing why development factors support the requested zoning change, the applicant stated:

“The current zoning does not allow for destructive battery testing...”

In addressing whether the zoning change provides an appropriate use of the land, the applicant further stated:

“Destructive battery testing is best served in remote and rural areas.”

Thus, destructive battery testing was affirmatively relied upon to explain both **why the existing zoning was inadequate and why the requested I-3 zoning was appropriate.**

The applicant also expressly represented that the proposed zoning and project were compatible because the parcel was remote, nearby commercial and residential uses were absent, surrounding lands were vacant and undeveloped, and I-3 zoning was consistent with that land-use pattern.

Accordingly, the stated project cannot reasonably be treated as relevant when supporting the need and appropriateness of the amendment but categorically irrelevant when considering characteristics of that same project that bear upon other rezoning criteria.

The question is not whether every project detail was required.

It is whether **enough information about the project was required to support the findings the County was making at that stage.**

C. Infrastructure Was Expressly a Rezoning-Stage Evidentiary Requirement

The County's ZC26-2 staff report identifies the applicant's required showing under CCC §16.08.060(E)(1), including:

“The change in land use represents orderly development and that adequate services and infrastructure to support the proposed land use [are] available in the area.”

The applicant's response was:

“The remote nature of the site will require minimal, isolated utility demands. Initial utilities for the site will be temporary to start with permanent power, water, and septic to come later.”

That response presents two materially different propositions.

The first—that **utility demands will be minimal**—is an affirmative factual characterization offered in support of the rezoning.

The second—that permanent power, water and septic will **“come later”**—defers establishment of the permanent means by which those needs will be served.

The record identified in the staff materials does not itself quantify the anticipated electrical demand or water demand, identify the permanent water source or permanent electrical capacity, or quantify anticipated wastewater requirements.

Again, Appellant does not contend that permanent utilities had to be installed or finally engineered.

The narrower question is:

What factual evidence allowed the County to determine that utility demands would be “minimal” and that adequate services and infrastructure were available to support the proposed land use if neither the anticipated demand nor the permanent means of serving that demand had yet been established?

D. The Hearing Record Demonstrates That Material Questions Were Directed to Later Project/SUP Review

The hearing record demonstrates that the distinction between the zoning amendment and later site-specific review was not merely an inference drawn by Appellant after the Planning Commission's decision. It was expressly discussed during the hearing while questions concerning matters relevant to the required zoning findings remained unresolved.

At approximately **22:13–22:22**, the applicant's representative confirmed his participation in the hearing and his availability to respond to questions. Later, at approximately **29:08–29:31**, the applicant's representative again indicated that he was available to answer questions concerning the application.

At approximately **25:48–27:06**, during discussion concerning concerns associated with the proposed use, the hearing discussion included the statement:

“Any health concerns are dealt with at the site specific review.”

This is significant because CCC §16.08.060(E)(2) nevertheless required an affirmative finding at the rezoning stage that the proposed amendment **“will not adversely impact the public health, safety and welfare.”**

At approximately **31:14–31:27**, the Chair emphasized the distinction between the proceeding then before the Commission and later project review, stating:

“We're here only for a zone change.”

Appellant does not dispute that characterization of the proceeding. ZC26-2 was a zoning-amendment proceeding, not final approval of Rivian's proposed facility. The significance is that the Commission was nevertheless required to make the findings applicable to that zoning amendment before recommending approval.

At approximately **38:41–39:25**, Appellant specifically asked what type of **“destructive battery testing”** was contemplated. That question was material because the applicant had itself identified destructive battery testing as the reason the requested I-3 zoning was necessary, while the nature and scale of that testing bears upon the information reasonably necessary to evaluate infrastructure, compatibility, emergency-response demands, and public health and safety.

At approximately **45:21–45:51**, the discussion again distinguished the zoning proceeding from later review, including statements concerning what is considered **“at the time of a zone change”** and that **“this isn't the time for the use.”**

Immediately thereafter, at approximately **45:59–46:32**, the discussion addressed what constitutes **“reasonable infrastructure”** and the matters evaluated at the zoning stage.

At approximately **46:32–47:06**, the discussion then returned to later site-specific review and indicated that the subsequent review would address matters concerning **“everything that affects neighboring public health, safety, welfare.”**

Read together, these portions of the hearing are important not because Appellant contends that every project-specific question had to be resolved during ZC26-2. They demonstrate the distinction actually being applied during the proceeding:

Questions concerning the nature and effects of the stated use were repeatedly characterized as matters for later site-specific review while the Commission was simultaneously being asked to make present findings concerning infrastructure, compatibility, public services, and public health, safety and welfare.

The applicant's representative was present and available to answer questions. Nevertheless, the Commission proceeded to make the affirmative findings without obtaining that information or identifying equivalent evidence in the record supporting the findings for which the information was potentially material.

Appellant does not contend that the Planning Commission itself bore the applicant's burden of proof or was required to ask every question raised during public comment.

The significance of the hearing sequence is narrower:

The deficiency was identified before the decision; the applicant was available during the hearing; the discussion expressly directed material project information toward later review; and the Commission nevertheless proceeded to make affirmative findings without obtaining that information or identifying equivalent evidence in the record supporting the findings for which the information was potentially material.

The objection therefore is not simply that additional information could have been requested.

It is that **future review is not itself evidence supporting a finding that must already be made.**

E. The Distinction Between Rezoning and Project Approval Does Not Resolve the Evidentiary Issue

Appellant agrees with the Commission's statement that **"we're here only for a zone change."** ZC26-2 was not the proceeding for final project approval, final engineering, or SUP-level operating conditions.

That distinction, however, does not resolve whether sufficient information concerning the stated project was necessary to support findings required **at rezoning.**

The applicant relied upon destructive battery testing to establish why I-3 zoning was necessary, and Churchill County's rezoning criteria expressly require consideration of the **"proposed zoning and project."** The project therefore was relevant to the extent its characteristics were material to the required zoning findings.

The appropriate distinction is not **project information now versus project information later**, but rather **the level of information necessary to support the determinations required at each stage.**

Accordingly:

If information concerning the proposed use was unnecessary to a required zoning finding, the record must contain other substantial evidence supporting that finding. If the information was necessary, deferring it to the SUP could not supply the evidentiary basis for an affirmative finding made at rezoning.

This distinction preserves the legitimate function of both proceedings without converting rezoning into final project approval or allowing future project review to substitute for evidence required at the zoning stage.

F. Nevada Authority Supports the Distinction Between Later-Stage Details and Evidence Necessary to a Present Finding

The Nevada Supreme Court's decision in ***City of Reno v. Citizens for Cold Springs***, 126 Nev. 263, 236 P.3d 10 (2010), is relevant to this issue.

Cold Springs did not require complete development plans or final engineering at the zoning stage. The Court recognized that detailed development matters may appropriately be addressed later.

However, where the applicable ordinance required an infrastructure determination at the zoning stage, the Court distinguished those later development details from the information necessary to support the required present determination.

Appellant recognizes that *Cold Springs* interpreted Reno's ordinance, not Churchill County Code, and does not contend that the ordinances are identical.

Its relevance is the principle it illustrates:

Deferral of final project details is different from deferral of the evidentiary basis necessary to make a finding required at the present land-use stage.

Churchill County independently requires consideration of adequate services and infrastructure and other criteria at rezoning. Accordingly, the question is whether sufficient information existed to support those determinations when they were made—not merely whether additional information could be obtained later.

The Nevada Supreme Court subsequently reinforced the same evidentiary distinction in ***Eureka County v. State Engineer***, 131 Nev. 846, 359 P.3d 1114 (2015). Although that case arose in the different context of water-right permitting, its relevance here is limited to the principle identified in Section III: **where governing law requires an affirmative finding in the present proceeding, the existence of a later process does not itself provide substantial evidence for that finding.**

These authorities do not determine the outcome of ZC26-2. They reinforce the distinction the Board must apply to Churchill County's own requirements: final details may properly await later review, but the evidentiary basis necessary to support findings required at rezoning must exist when those findings are made.

G. Future SUP Review Cannot Substitute for Evidence Supporting a Present Finding

The existence of a future SUP process provides important regulatory protection.

It may allow the County to impose operational conditions, require fire and emergency plans, evaluate site design, address hazardous materials, review specific utility connections, and impose other project-specific requirements.

But those protections answer a different question.

They establish that **additional review will occur later.**

They do not, standing alone, establish that:

- adequate services and infrastructure are available to support the proposed land use;
- the proposed zoning and project are compatible with adjacent properties;
- the zoning amendment substantially conforms with applicable plans and policies; or
- the amendment will not negatively affect public services or adversely affect public health, safety and welfare.

Those are determinations associated with the zoning amendment itself.

Accordingly, reliance upon future review cannot replace the evidentiary showing necessary to support a finding that County Code requires before that future review occurs.

H. The County's Own Staff Analysis Demonstrates Why the Deferred Information Was Material

The staff report did not treat destructive battery testing as irrelevant.

Staff expressly relied upon it in its Master Plan analysis. For example, staff stated under ED 9.2 that industrial zoning in this area would help attract industries “**such as electric battery testing.**”

Staff likewise relied upon the proposed industrial development to conclude that the amendment would expand the County's tax base with minimal disruption to existing agricultural and residential uses.

The stated project was therefore considered when it supported the rezoning.

The problem arises if information about that same project was considered premature when necessary to evaluate potential demands or consequences relevant to the remaining criteria.

Appellant respectfully submits that the County must apply a consistent evidentiary approach:

If the proposed project is sufficiently concrete to support the need, appropriateness, economic benefit and compatibility of the zoning amendment, it is also sufficiently relevant to require reasonable factual information concerning those characteristics necessary to evaluate infrastructure, compatibility, public services, health, safety and welfare.

This does not require complete project review.

It requires only enough information to substantiate the findings being made.

I. The Applicant's Burden Cannot Be Satisfied by a Promise That Missing Information Will Be Developed Later

The County's zoning framework places the burden upon the applicant to provide adequate information substantiating the amendment.

That burden would have little practical meaning if a material deficiency in the evidence could be answered solely by stating that the information would be supplied after the zoning amendment was approved.

Future information may ultimately demonstrate that adequate power, water, wastewater capacity, emergency-response capability and other necessary resources exist.

If so, that evidence may support the requested amendment.

But the possibility that sufficient evidence **may exist later** is not equivalent to substantial evidence supporting an affirmative finding **now**.

This is precisely why Appellant requested further factual development rather than asking the Planning Commission to presume the project unsafe.

J. The Proper Remedy Is Further Evidentiary Development, Not Premature Project Adjudication

Appellant is not asking the Board to adjudicate Rivian's future SUP through this appeal.

Nor is Appellant asking the Board to conclude, without evidence, that adequate infrastructure cannot be provided or that destructive battery testing cannot safely occur at this location.

Where the existing record is insufficient to substantiate a zoning-stage criterion or finding, the appropriate response is not to assume that the missing information will be satisfactorily resolved after the zoning has changed.

Rather, sufficient evidence should be developed and considered **before the required affirmative finding is made.**

That approach preserves both interests:

Rivian retains the opportunity to establish that the requested zoning satisfies County Code, while Churchill County avoids making a permanent zoning decision on the assumption that material questions will be satisfactorily resolved after the zoning has already changed.

K. Requested Determination Under Ground II

For these reasons, Appellant respectfully requests that the Board determine that matters expressly relevant to the rezoning criteria could not be treated solely as future SUP or project issues where sufficient information concerning those matters was necessary to substantiate the findings supporting ZC26-2.

Appellant respectfully requests that the Board determine that future project or SUP review did not itself provide substantial evidence supporting findings required at rezoning.

Accordingly, Appellant requests that the Board reverse the Planning Commission's recommendation on the present evidentiary record. Alternatively, if the Board determines that additional evidence could cure the deficiencies identified herein, Appellant requests that the matter be remanded or continued for development and consideration of an adequate evidentiary record before the required findings are made.

GROUND III — THE FINDING OF SUBSTANTIAL COMPLIANCE WITH THE CHURCHILL COUNTY MASTER PLAN WAS NOT ADEQUATELY SUPPORTED

A. The Required Master Plan Finding Must Be Evaluated Against the Master Plan as a Whole

CCC §16.08.060(E) requires the Planning Commission, when recommending approval of a zoning amendment, to make an affirmative finding concerning the amendment's substantial compliance with and support of the goals and policies of the Churchill County Master Plan.

The Master Plan itself explains its role in County land-use decision-making. It states that the Plan establishes Churchill County's vision for the future and provides the framework and foundation for decisions of the Board of County Commissioners, Planning Commission, and community concerning growth and development through 2040.

The Plan is comprehensive by design. Its chapters address, among other subjects, conservation and natural resources, hazards and hazard mitigation, economic development, transportation, public services and facilities, open space, and land use.

Accordingly, the required Master Plan conformity determination cannot reasonably be reduced solely to whether the property's mapped land-use designation permits or anticipates industrial development.

The Industrial designation is important evidence supporting ZC26-2. Appellant does not dispute that fact.

The issue is whether the Planning Commission had an adequate factual basis to determine that the particular amendment **substantially complied with and supported the applicable goals and policies of the Master Plan considered together**, including policies relevant to the development facilitated by the requested zoning change.

As established in Section III, this does not require separate findings concerning every provision of the Master Plan. It requires a reasoned determination based upon those goals and policies materially implicated by the amendment.

B. Staff Relied Primarily Upon the Industrial Designation and Selected Policies Favoring Industrial Development

The ZC26-2 staff report identified several Master Plan goals and policies in support of approval.

Among those were:

- **ED 9**, establishing industrial uses as a fourth pillar of the economy;
- **ED 9.1**, identifying suitable industrial areas along major highways and railways;
- **ED 9.2**, providing additional industrial and manufacturing employment opportunities and attracting a greater variety of industries;
- **LU 1**, providing opportunities for managed growth within Industrial designations;
- **LU 3**, requiring development to be beneficial to the County and promote sustainability;
- **LU 5**, encouraging industrial expansion supportive of economic development and job creation;

- **LU 5.1**, reducing obstacles to development of industrial lands; and
- **LU 6.2**, separating commercial uses from industrial activity.

Those policies are relevant and properly form part of the Master Plan analysis.

Appellant's objection is not that staff considered them.

The concern is that the staff analysis does not demonstrate comparable consideration of other Master Plan provisions directly implicated by the requested amendment and the proposed use identified as its purpose.

The question therefore is not whether the staff report identified **Master Plan policies supporting industrial development**. It plainly did.

The question is whether that analysis was sufficient to support the broader affirmative finding of substantial Master Plan compliance.

C. The Staff Report Itself Relied Upon LU 3's Requirements of Public Benefit and Sustainability

The staff report cited **Goal LU 3**:

“Development shall be beneficial to the County and shall promote sustainability.”

Staff concluded that ZC26-2 satisfied LU 3 because the amendment would create an industrial cluster near the Trinity Junction interchange and stated:

“This will result in an expanded tax base with minimal disruption to existing agricultural and residential uses.”

This is significant because LU 3 contains **two concepts**:

benefit to the County and sustainability.

The staff response principally identified an anticipated economic benefit—an expanded tax base—and minimal disruption to agricultural and residential uses.

The record should therefore permit the Board to identify the factual basis for those conclusions.

Appellant does not contend that ZC26-2 will provide no economic benefit or that the County must establish a particular dollar amount of benefit unless otherwise required by law.

Rather, where an **expanded tax base** and **minimal disruption** were affirmatively relied upon as evidence satisfying LU 3, those conclusions should have an identifiable factual basis.

Likewise, the sustainability component of LU 3 should not disappear merely because economic-development policies also support industrial development.

Appellant does not contend that sustainability requires proof of zero environmental impact or complete project-level analysis. The issue is whether the record contained sufficient information to permit the sustainability component of the policy to be meaningfully considered at all.

D. Public Services and Facilities Are Part of the Master Plan's Growth Framework

Chapter 9 of the Master Plan expressly addresses **Public Services and Facilities**.

Its introductory language states:

“As growth continues, the demand for public services and facilities will increase.”

The Plan explains that existing and proposed land uses, existing services and facilities, and service standards are used to determine future service and facility needs. It specifically addresses water services, sanitary sewer, other utilities, fire and police protection.

These subjects directly overlap with issues raised concerning ZC26-2.

The applicant stated that permanent power, water and septic would come later. At the same time, information concerning the anticipated nature and scale of destructive battery testing was limited.

As discussed in Grounds I and II, Appellant does not contend that final utility engineering was required before rezoning.

The relevance to Ground III is different:

The Master Plan itself treats the relationship between growth, land use, public services and infrastructure as an integrated planning issue.

Accordingly, those considerations cannot reasonably be characterized as wholly irrelevant to Master Plan conformity merely because more detailed infrastructure review may occur later.

E. Water Protection and Dependable Water Supply Are Express Master Plan Objectives

Chapter 9 establishes:

GOAL PSF 1: “To protect and preserve water rights and water supply in Churchill County.”

The Plan contains numerous implementing policies, including:

PSF 1.11, which discourages long-term groundwater withdrawals when they exceed available aquifer recharge;

PSF 1.11.1, which calls for management of groundwater resources so annual use does not exceed levels sustainable at current rates of inflow and recharge;

PSF 1.12, concerning evaluation of water-supply alternatives capable of meeting future demands;

PSF 1.13, concerning planning water supply to meet average demand in normal-to-dry years; and

PSF 1.14, which requires that a safe and dependable water supply be provided.

Appellant does not contend that these policies establish that the proposed project will adversely affect groundwater or that every one applies identically to ZC26-2.

Nor does Appellant contend that Rivian was required to construct its permanent water system before seeking rezoning.

The evidentiary issue is narrower.

Where the applicant stated that permanent water would “come later,” and the anticipated water demand and permanent source were not established in the information identified in the staff report, the record provides a limited factual basis upon which to evaluate which of the Master Plan's water-resource policies are implicated and whether the proposed amendment is consistent with them.

The subject parcel lies within **Nevada Hydrographic Basin 101**. As discussed more fully in Ground IV, that fact does not itself establish an adverse groundwater impact. It does, however, reinforce the materiality of determining anticipated water demand and source when evaluating which Master Plan water-resource policies are implicated.

That uncertainty does not establish an adverse water impact.

But it likewise cannot establish **affirmative conformity** with applicable water-resource policies without sufficient underlying information.

F. The Master Plan Expressly Connects Development, Water Infrastructure and Fire Protection

The Master Plan's water policies also demonstrate that water infrastructure cannot always be evaluated independently of public safety.

For example, **PSF 1.8**, although specifically applicable during creation of parcels within identified service areas, requires water service to be capable of meeting drinking-water standards and providing adequate flow and pressure in case of fire.

Appellant does not rely upon PSF 1.8 as a direct legal requirement imposed upon ZC26-2 if its triggering conditions are not satisfied.

Its relevance is illustrative:

The County's own Master Plan recognizes that water-service adequacy and fire-response capability can be interrelated planning considerations.

That relationship is relevant here because destructive battery testing was expressly identified as the intended use, while questions concerning the nature and scale of that testing, water requirements, fire hazards and emergency-response demands were raised before the Planning Commission.

Without sufficient information concerning the contemplated activity, it is difficult to determine what fire-protection infrastructure or response capability may be necessary—or whether existing resources are adequate.

G. The Nature of the Proposed Use Determines Which Master Plan Policies Require Meaningful Evaluation

As discussed under Ground I, “destructive battery testing” is not a single uniform activity.

The types and scale of testing contemplated can materially affect the relevance of Master Plan policies concerning water, utilities, emergency services, environmental protection, public safety and sustainability.

The evidentiary showing necessary to evaluate Master Plan conformity should therefore be informed by the nature and scale of the development facilitated by the amendment.

For example, if the contemplated testing involves activities capable of requiring specialized hazardous-material response, fire suppression, containment, specialized responder training or substantial utility infrastructure, those characteristics may implicate Master Plan policies differently than a low-intensity industrial use with limited infrastructure and emergency-service demands.

Appellant does not contend that any particular consequence will occur at Rivian's proposed facility.

The point is that:

The County cannot meaningfully determine which Master Plan considerations are material without sufficient information concerning the use against which conformity is being evaluated.

H. Hazard Mitigation and Environmental Protection Are Components of the Same Master Plan

The Master Plan expressly identifies **Chapter 3 — Conservation and Natural Resources** as addressing protection and utilization of land, water, air and other resources.

It identifies **Chapter 4 — Hazards and Hazard Mitigation** as addressing hazardous conditions existing within the County and responsibility and plans for mitigation.

These chapters are part of the same Master Plan upon which the required conformity finding is based.

Appellant does not contend that the existence of hazard-related policies prohibits a destructive battery-testing facility or requires the Planning Commission to conduct a complete environmental review at rezoning.

Rather, where the applicant seeks Heavy Industrial zoning specifically to facilitate an activity involving destructive battery testing, applicable conservation, environmental and hazard-related policies should be identified and meaningfully considered to the extent the characteristics of the proposed use implicate them.

This is especially relevant because Churchill County's own planning documents recognize hazardous-material emergency response as a County planning responsibility. The County's Multi-Jurisdictional Hazard Mitigation Plan identifies a Churchill County Hazardous Materials Response Plan that provides guidance to emergency personnel and a resource directory for hazardous-material emergencies.

The Master Plan itself provides the relevant planning framework for the required conformity determination. The Multi-Jurisdictional Hazard Mitigation Plan is cited only as **corroborative evidence demonstrating that hazardous-material emergency response is a recognized County planning concern**, not as an independent zoning requirement applicable to ZC26-2.

The existence of that plan does not establish that County emergency services are inadequate.

It demonstrates that hazardous-material response is a legitimate County planning consideration rather than an issue categorically unrelated to land-use planning.

I. Economic-Development Policies Must Be Read Together With the Plan's Other Goals and Policies

Appellant recognizes that the Master Plan affirmatively encourages industrial development.

The staff report appropriately identified **ED 9, ED 9.1, ED 9.2, LU 5, and LU 5.1** as policies favoring industrial expansion, employment opportunities, and attraction of additional industries.

Those policies should be given meaningful weight.

But the Master Plan does not state that economic-development policies supersede its water, infrastructure, sustainability, public-safety, environmental, or public-service policies whenever a parcel lies within an Industrial designation.

Indeed, the Master Plan's comprehensive structure indicates the opposite: land-use decisions are made within a framework containing **all of those planning objectives**.

The appropriate inquiry is therefore not:

Does the Master Plan encourage industrial development here?

It plainly does.

The appropriate inquiry is:

Has sufficient evidence been provided to determine that this particular zoning amendment, considered against the applicable Master Plan goals and policies as a whole, substantially complies with and supports that Plan?

J. The Staff Analysis Demonstrates an Imbalance in the Master Plan Review

The staff analysis provides detailed affirmative explanations for the economic-development and industrial-location policies supporting ZC26-2.

For example, staff concluded that industrial zoning would attract industries such as electric battery testing, create new industrial uses, expand the tax base, and locate industrial development where the Master Plan intends.

The record does not demonstrate a comparable analysis of the Master Plan's applicable water, infrastructure, sustainability, environmental, hazard-response, and public-service objectives before the finding of substantial Master Plan compliance was made.

That does not mean the Planning Commission was required to discuss every policy contained in the 186-page Master Plan.

It does mean that **directly applicable policies materially implicated by the amendment should not be omitted merely because other Master Plan policies favor the general category and location of development**.

A cross-reference identifying the Master Plan provisions materially implicated by ZC26-2, the provisions addressed in the staff analysis, the evidence identified in support of those provisions, and the corresponding evidentiary issues is provided at **Exhibit 4 — Master Plan Policy Cross-Reference Matrix for ZC26-2**.

K. The Master Plan Finding Required More Than Geographic Consistency

The central issue under Ground III is not whether the parcel is appropriately located within an area where Churchill County intends industrial development.

Appellant accepts that the Industrial designation weighs substantially in favor of ZC26-2.

The issue is whether geographic consistency was treated as effectively resolving the broader finding of Master Plan conformity despite unresolved factual questions relevant to other applicable goals and policies.

The distinction can be stated simply:

The Industrial designation answers an important question about where industrial development is planned. It does not, standing alone, answer whether a particular zoning amendment substantially complies with and supports the Master Plan's applicable goals and policies as a whole.

The applicant's burden therefore required sufficient information to permit meaningful evaluation of both the policies favoring industrial development **and those governing how that development should occur.**

L. Requested Determination Under Ground III

For these reasons, Appellant respectfully requests that the Board determine that the present record does not adequately support the finding that ZC26-2 substantially complies with and supports the goals and policies of the Churchill County Master Plan.

Appellant does not request that the Board reject the Industrial designation or disregard the Plan's economic-development objectives.

Rather, Appellant requests that the Board give effect to the **entire planning framework** adopted by Churchill County and determine whether sufficient evidence exists to evaluate ZC26-2 against the directly applicable policies concerning industrial development, sustainability, water resources, infrastructure, public services, environmental protection, hazard mitigation, and public health and safety.

Where the existing record is insufficient to make that determination, Appellant respectfully requests that the Board **reverse the Planning Commission's recommendation on the present record or, alternatively, remand or continue the matter until sufficient factual evidence exists to evaluate the amendment against the applicable Master Plan goals and policies before the required affirmative finding is made.**

GROUND IV — THE DETERMINATION THAT ADEQUATE SERVICES AND INFRASTRUCTURE ARE AVAILABLE TO SUPPORT THE PROPOSED LAND USE WAS NOT SUPPORTED BY SUFFICIENT EVIDENCE

A. Adequate Services and Infrastructure Are an Express Rezoning-Stage Consideration

CCC §16.08.060(E)(1) expressly requires consideration of whether:

“The change in land use represents orderly development and that adequate services and infrastructure to support the proposed land use are available in the area.”

This criterion requires more than determining that infrastructure could potentially be designed or constructed at some later date.

To meaningfully evaluate whether adequate services and infrastructure are available to support a proposed land use, the record must contain sufficient information to permit two related inquiries:

What services and infrastructure will the proposed land use reasonably require, and what services and infrastructure are available or reasonably capable of meeting those requirements?

Appellant does not contend that every permanent utility connection must already exist, that final engineering must be completed, or that project-level infrastructure design must occur before rezoning.

The narrower issue is whether sufficient planning-level information existed to support the affirmative determination required at the rezoning stage.

B. The Applicant Characterized Anticipated Utility Demands as “Minimal” Without Quantifying Those Demands

In response to the County's infrastructure criterion, the applicant stated:

“The remote nature of the site will require minimal, isolated utility demands. Initial utilities for the site will be temporary to start with permanent power, water, and septic to come later.”

This response contains an affirmative factual characterization: anticipated utility demands will be **“minimal.”**

Yet the information identified in the staff materials did not quantify anticipated electrical demand, water demand, wastewater generation, permanent water supply, or permanent electrical capacity.

Nor does the site's remoteness itself establish the magnitude of anticipated utility demand.

Remoteness may affect **how services are delivered**. It does not establish **how much water, electricity, wastewater capacity, or other infrastructure the proposed activity will require**.

Accordingly, the relevant evidentiary question is not whether Rivian can ultimately design and construct adequate infrastructure.

It is:

What facts in the record supported the applicant's affirmative representation that the proposed land use would impose “minimal” utility demands and the County's determination that adequate services and infrastructure were available to support those demands?

C. The Nature and Scale of the Proposed Testing Are Relevant to Determining Infrastructure Demand

The applicant identified **destructive battery testing** as the reason the existing zoning was inadequate and I-3 zoning was necessary.

As discussed in Grounds I and II, that description does not itself establish the nature or scale of the contemplated activity.

Infrastructure requirements may reasonably vary depending upon such matters as the number and type of batteries tested, testing frequency, battery chemistry and size, facility scale, equipment requirements, containment systems, fire-protection requirements, water needs, electrical requirements, and other operational characteristics.

Appellant does not contend that all such details were required at rezoning.

The point is that **some reasonable understanding of the contemplated activity was necessary to determine the magnitude and type of services and infrastructure it would require.**

A relatively limited testing operation may impose relatively limited infrastructure demands.

A substantially larger or more intensive operation may impose different demands.

Appellant does not ask the Board to presume either scenario.

The absence of sufficient information to determine that distinction is itself the evidentiary issue.

D. The Record Did Not Establish the Permanent Electrical Demand or Available Capacity Necessary to Support It

The applicant stated that permanent power would **“come later.”**

Appellant does not contend that a permanent electrical connection had to be constructed before rezoning or that final electrical engineering was required.

But the infrastructure criterion still required an evidentiary basis from which to evaluate whether adequate infrastructure was available or reasonably capable of supporting the proposed land use.

The information identified in the staff materials did not establish:

- the anticipated permanent electrical load;
- what existing electrical infrastructure or capacity would serve that load;
- whether expansion or additional infrastructure would be necessary;
- whether such expansion could materially affect other infrastructure or public services; or
- the factual basis for characterizing the anticipated electrical demand as “minimal.”

Appellant does not contend that sufficient electrical service cannot be provided.

The issue is whether the record contained substantial evidence supporting the affirmative determination that adequate infrastructure **was available to support the proposed land use** when the anticipated demand itself had not been established.

E. The Record Did Not Establish Permanent Water Demand or the Source From Which That Demand Would Be Supplied

The applicant likewise stated that permanent water would **“come later.”**

The information identified in the staff materials did not quantify anticipated permanent water demand or identify the permanent source from which that demand would be supplied.

Again, Appellant does not contend that the permanent water system had to be installed or finally engineered before rezoning.

Nor does Appellant contend, based merely upon the absence of this information, that the proposed facility will consume substantial quantities of water, adversely affect groundwater, impair existing water rights, or be unable to obtain an adequate supply.

The evidentiary problem is more basic:

Without knowing approximately how much permanent water the proposed land use will require and the source expected to supply that water, what evidence permitted a determination that adequate water infrastructure was available to support the proposed land use?

The answer cannot reasonably be supplied solely by describing anticipated utility demands as **“minimal”** when the demand underlying that characterization was not quantified.

F. The Parcel's Location Within Hydrographic Basin 101 Reinforces the Materiality of Identifying Water Demand and Source

The subject parcel is located within Nevada **Hydrographic Basin 101 — Carson Desert**, near the hydrographic-basin boundary.

The Nevada Division of Water Resources identifies Basin 101 as the Carson Desert hydrographic basin within the Carson River Region. Churchill County's own Water Conservation Plan likewise identifies the Carson Desert as Basin 101.

The parcel's location within Basin 101 does **not** establish that the proposed project will adversely affect groundwater or that an adequate water supply cannot be obtained.

It does, however, make the unidentified permanent water source and unquantified permanent demand materially relevant to the County's infrastructure determination.

NDWR currently identifies the **2,500 acre-feet-per-year perennial-yield figure for the Carson Desert as a reconnaissance-era estimate** and is proposing reassessment of water availability in the basin. NDWR specifically explains that newer work indicates potentially more water may be available if responsibly developed, while also identifying existing domestic wells, water quality, the sensitive basalt aquifer

supplying existing users, environmental concerns, and other considerations requiring further understanding for effective and safe development of the potential supply.

That qualification is important.

Appellant therefore does **not** contend that the historical 2,500 AFY estimate establishes the amount of water presently available to Rivian, that Basin 101 is incapable of supporting additional development, or that the Board should adjudicate groundwater availability based upon a reconnaissance-era estimate.

Rather, the current NDWR information demonstrates why **actual demand and source matter**.

Churchill County's own Water Conservation Plan reinforces that conclusion. The Plan states that effective water-resource protection and planning are essential to the community's long-term sustainability and that the County works with the State Engineer, USGS, TCID and other entities to study **"available water inventories and water table trends, particularly as it relates to Basins 101 and 102."** The Plan further states that **98 percent of Basin 101's recharge comes from infiltration of Carson and Truckee River waters through the Truckee-Carson Irrigation District canal system** and characterizes sustainment of those flows as vital to water storage, recharge and contingency planning in Churchill County.

The County's Master Plan similarly directs the County to discourage long-term groundwater withdrawals when they exceed available aquifer recharge, work with state agencies to manage groundwater at levels sustainable at current rates of inflow and recharge, evaluate water-supply alternatives capable of meeting future demands, and ensure a safe and dependable water supply.

None of those authorities establishes that Rivian's proposed facility will adversely affect Basin 101.

They establish something narrower and directly relevant to the required infrastructure finding:

Where the permanent water source had not been identified and anticipated permanent demand had not been quantified, the record lacked the information necessary to meaningfully compare the proposed land use's water requirement against the source and infrastructure expected to serve it.

Accordingly, the relevant planning-level questions were:

Approximately how much permanent water will the proposed land use require? From what source is that water expected to be obtained? And what evidence establishes that the identified source and infrastructure are adequate or reasonably capable of serving that demand?

Those questions do not require the Board to adjudicate water rights or perform the State Engineer's regulatory function.

They concern the County's own required determination that adequate services and infrastructure are available to support the proposed land use.

G. The Record Likewise Did Not Establish Anticipated Wastewater Demand or the Basis for the Proposed Permanent Septic Service

The applicant stated that permanent septic would also **"come later."**

Appellant does not contend that a final septic design or permit was required at rezoning.

But anticipated wastewater generation is necessarily related to the scale and nature of the proposed development and the permanent infrastructure necessary to serve it.

The information identified in the staff materials did not establish anticipated wastewater generation or the planning-level basis for determining that the proposed permanent means of wastewater disposal could reasonably support the contemplated land use.

As with power and water, the issue is not final engineering.

It is whether enough information existed to support the infrastructure determination required **before final engineering occurs.**

H. "Services" Are Not Necessarily Limited to Utility Connections

CCC §16.08.060(E)(1) addresses adequate **"services and infrastructure."**

Depending upon the nature and scale of a proposed activity, relevant services may include fire protection, emergency medical response, hazardous-material response, law enforcement, transportation access, and related County or regional services.

Appellant does not contend that Churchill County presently lacks those capabilities or that every project-specific response requirement must be established at rezoning.

The narrower infrastructure question is whether sufficient information concerning the proposed activity existed to determine what services it would reasonably require and whether those services were available or reasonably capable of meeting that demand.

The specific evidentiary issues concerning emergency response, hazardous-material response, public services, and public health, safety and welfare are addressed in **Ground V.**

I. Remoteness May Support Compatibility but Does Not Establish Infrastructure or Service Adequacy

The applicant and staff relied in part upon the property's remoteness in support of ZC26-2.

Remoteness is relevant and may weigh favorably in evaluating compatibility with residential or other sensitive uses.

But remoteness does not itself establish infrastructure capacity.

Indeed, depending upon the circumstances, remoteness may increase the distance over which utilities must be extended, increase emergency-response times, require independent infrastructure, or otherwise affect the means by which necessary services are provided.

Appellant does not contend that remoteness makes the site unsuitable.

The point is simply:

Evidence that a site is remote is not evidence establishing how much infrastructure the proposed land use requires or whether adequate services and infrastructure are available to meet those requirements.

The same fact may favor one zoning criterion while requiring additional factual evaluation under another.

J. The Master Plan Independently Recognizes the Relationship Between Growth and Service Capacity

As discussed more fully in Ground III, Churchill County's Master Plan expressly recognizes that growth creates additional demand for public services and facilities.

Chapter 9 addresses water, wastewater, utilities, fire protection, police protection, and other public services as components of the County's growth framework.

This does not create an additional infrastructure requirement beyond the County Code criterion applicable to ZC26-2.

It corroborates that consideration of anticipated demand and available service capacity is an ordinary component of Churchill County's own land-use planning framework.

K. The County's Contemporaneous Land-Use Review Demonstrates That Planning-Level Infrastructure Evaluation Can Occur Before Final Engineering

The same August 12 Planning Commission packet contains the Sand Creek (**Exhibit 8**) subdivision matter, for which County review expressly addressed water and sewer infrastructure necessary to serve the development.

Among the conditions documented in the County packet were requirements that water and sewer improvements be designed to County standards and that existing water or sewer lines, lift-station upgrades, or additional water-main segments determined necessary to serve the project be completed at the developer's expense. The packet further documents compliance with requirements concerning water dedication, impact fees, and infrastructure-construction timing.

Appellant recognizes that Sand Creek involved a different type of land-use action, different facts, and potentially different approval criteria.

It is not offered to establish that ZC26-2 was legally required to undergo the identical analysis, provide identical studies, or satisfy requirements applicable to a subdivision.

Its relevance is narrower:

The County's own contemporaneous planning materials demonstrate that planning-level questions concerning what infrastructure a development will require, whether existing infrastructure must be upgraded, and who will bear the resulting infrastructure obligations can be evaluated before final construction is complete.

The comparison therefore reinforces the distinction made throughout this Ground between requiring **final infrastructure design**, which Appellant does not request, and requiring **sufficient planning-level evidence to support a presently required infrastructure finding**.

L. *City of Reno v. Citizens for Cold Springs* Supports the Distinction Between Final Infrastructure Design and Evidence of Infrastructure Adequacy

As discussed more fully in Ground II, *City of Reno v. Citizens for Cold Springs*, 126 Nev. 263, 236 P.3d 10 (2010), is relevant to this distinction.

Cold Springs did not require completion of final infrastructure design at the zoning stage.

Its relevance here is narrower: where the governing land-use framework requires an infrastructure determination in the present proceeding, the existence of later infrastructure planning does not itself supply the evidentiary basis for that present determination.

Churchill County's criterion independently requires consideration of whether adequate services and infrastructure are available to support the proposed land use.

Accordingly, the relevant question remains whether the record before the Planning Commission contained substantial evidence supporting that determination when it was made.

M. A Future Ability to Provide Infrastructure Is Not Necessarily Evidence That the Present Criterion Has Been Satisfied

Rivian may ultimately be able to obtain sufficient power, secure an adequate water source, construct appropriate wastewater facilities, and provide every other service or infrastructure component necessary for the proposed development.

Appellant does not contend otherwise.

But the possibility that infrastructure **can be provided later** is analytically different from evidence supporting a present finding that adequate services and infrastructure **are available to support the proposed land use**.

Future engineering may answer the first question.

The County's rezoning criterion required an adequate evidentiary basis for the second.

Allowing the possibility of future infrastructure development to substitute entirely for evidence of anticipated demand and service capacity would risk making the infrastructure criterion effectively self-satisfying:

Infrastructure would be deemed adequate because whatever infrastructure proves necessary could be addressed later.

That interpretation would give little independent effect to the requirement that adequacy be considered during the zoning-amendment process.

N. The Characterization of Utility Demand as “Minimal” Required an Identifiable Factual Basis

The applicant's statement that anticipated utility demands would be “**minimal**” is important because it appears to supply the factual premise supporting infrastructure adequacy despite the absence of quantified permanent demands and sources.

But:

A characterization such as “minimal” is a conclusion. Its evidentiary weight depends upon the underlying facts supporting it.

A conclusory characterization does not become substantial evidence merely because it appears in an application; its evidentiary value depends upon the factual information supporting the conclusion.

Here, the information identified in the staff materials did not establish the anticipated permanent electrical load, permanent water demand and source, wastewater generation, or sufficient characteristics of the proposed testing operation from which those demands could reasonably be evaluated.

Appellant does not ask the Board to substitute a contrary unsupported conclusion that the demands will be substantial.

Appellant asks the Board to identify:

What evidence in the record allowed a reasonable mind to accept the characterization of those demands as “minimal” and to conclude that adequate services and infrastructure were available to support them?

If the answer depends upon information to be supplied during future project review, that information did not constitute evidence in the record when the rezoning finding was made.

O. Requested Determination Under Ground IV

For these reasons, Appellant respectfully requests that the Board determine that the present record did not contain sufficient evidence supporting the determination that adequate services and infrastructure were available to support the proposed land use.

This Ground does not ask the Board to determine that adequate infrastructure **cannot** be provided.

Nor does it ask the Board to require final engineering, adjudicate water rights, determine project-specific groundwater impacts, or decide matters properly reserved for later permitting authorities.

It asks the Board to enforce the evidentiary requirement applicable at the zoning stage:

Before determining that adequate services and infrastructure are available to support the proposed land use, the record must contain sufficient information concerning the anticipated demands of that land use and the services and infrastructure reasonably capable of meeting those demands.

Accordingly, Appellant respectfully requests that the Board **reverse the Planning Commission's recommendation on the present evidentiary record or, alternatively, remand or continue the matter until sufficient planning-level evidence concerning anticipated demand, permanent water source, electrical requirements, wastewater requirements, available service capacity, and other materially**

implicated infrastructure has been developed and considered before the required affirmative finding is made.

GROUND V — THE PUBLIC SERVICES, PUBLIC HEALTH, SAFETY AND WELFARE DETERMINATIONS WERE NOT SUPPORTED BY SUFFICIENT EVIDENCE

A. Public Services, Public Health, Safety and Welfare Were Express Components of the Required Rezoning Findings

CCC §16.08.060(E) required the Planning Commission, before recommending approval of ZC26-2, to determine that the proposed amendment would not negatively impact existing or planned public services or facilities and would not adversely impact public health, safety and welfare.

The staff report expressly made that determination, stating:

“Churchill County has no planned public services and facilities in the area. The subject parcel has legal and physical access via US 95 Lovelock Highway and/or Pole Line Road. Police and fire service will be provided via these roads. The proposed zone change will not adversely impact public health, safety, and welfare or negatively impact existing public services or facilities.”

The applicant identified **destructive battery testing** as the intended use necessitating I-3 zoning.

Accordingly, the issue is not whether police and fire vehicles can physically reach the parcel. The issue is whether sufficient information existed concerning the activity proposed for the parcel to determine what public-service demands and reasonably foreseeable public-health and safety considerations were material to the required finding.

This distinction was expressly implicated during the hearing. At approximately **46:39–47:06**, the Commission was told that later site-specific review would examine **“everything that affects neighboring public health, safety, welfare”** and that public protection is addressed through different application phases. At approximately **47:44–48:14**, immediately thereafter, the Commission moved to find that the criteria under CCC §16.08.060(E) had been met and recommend approval of ZC26-2.

As explained more fully in Ground II, Appellant does not contend that SUP-level review was required at rezoning. The narrower question under this Ground is whether sufficient evidence supported the public-service and public-health, safety and welfare determinations that were nevertheless made at this stage.

B. “Destructive Battery Testing” Does Not, Standing Alone, Establish the Relevant Hazard Profile

The application identifies destructive battery testing but does not, on the present record, establish sufficient detail concerning the testing contemplated to determine its relevant hazard and emergency-response characteristics.

Material variables may include battery chemistry, battery size and quantity, state of charge, whether individual cells, modules or full vehicle battery packs will be tested, testing frequency, storage quantities, test methods, whether testing intentionally induces thermal runaway, fire, rupture or other failure modes, and the containment and control systems associated with those activities.

These variables matter because different testing activities can create materially different potential demands upon fire protection, hazardous-material response, emergency medical services, environmental response, law enforcement and transportation resources.

Appellant does not contend that every one of these variables constitutes an independent application requirement.

The issue is whether enough information was provided to determine **which variables were material to the public-service and health-and-safety findings the Planning Commission was required to make.**

C. Authoritative Federal Research Confirms That Battery Characteristics and Test Conditions Affect Failure Behavior

The materiality of these variables is not speculative.

Sandia National Laboratories, through work sponsored by the U.S. Department of Energy, has conducted extensive lithium-ion battery abuse testing. The United States Advanced Battery Consortium battery-abuse program evaluates destructive testing conditions including electrical abuse such as overcharge and short circuit; mechanical abuse such as crush, penetration, drop and mechanical shock; and thermal abuse such as elevated-temperature exposure, simulated fire and thermal shock.

That work specifically evaluates how factors including **cell chemistry, state of charge, cell capacity and energy density affect energy release and heating rates during thermal runaway.**

Separate Sandia research evaluating commercial lithium-ion cells of different chemistries and states of charge found materially different thermal-runaway behavior. Among other findings, thermal-runaway onset temperature decreased and peak heating rate increased as state of charge increased, and different cathode chemistries exhibited different thermal behavior.

More recent DOE-supported research likewise evaluates thermal-runaway severity using battery characteristics including chemistry, state of charge and capacity.

These authorities are not offered to establish that Rivian will conduct any particular abuse test or experience thermal runaway.

They establish the narrower evidentiary point:

“Destructive battery testing” is not sufficiently descriptive, by itself, to establish a uniform hazard or response profile. The characteristics of the batteries and the nature and scale of the testing materially affect the consequences that may reasonably require evaluation.

Accordingly, Appellant's questions concerning battery type, scale and testing methods were relevant to determining what evidence was necessary to support the County's public-service and public-health and safety findings.

D. Emergency-Response Adequacy Cannot Be Meaningfully Evaluated Without Understanding the Hazards to Which Responders May Be Asked to Respond

Questions concerning emergency-response capability were raised both in written public comment and verbally during the Planning Commission hearing.

Those questions were material.

Depending upon the nature and scale of the testing contemplated, reasonably relevant emergency-response considerations may include:

- firefighter and emergency-responder training;
- hazardous-material response procedures;
- firefighting or containment equipment;
- personal protective equipment;
- air-monitoring equipment and procedures;
- decontamination capability;
- emergency water or suppression resources;
- incident-command procedures;
- communications and public-warning systems;
- law-enforcement and traffic-control resources; and
- mutual-aid assistance from outside agencies.

Appellant does not assert that Churchill County presently lacks any particular capability.

That determination cannot reasonably be made without first identifying the hazard to which County personnel might be expected to respond.

Accordingly:

The threshold question is not whether Churchill County is prepared or unprepared. It is whether sufficient information concerning the contemplated testing existed to determine what preparedness would reasonably be required.

Only after identifying the reasonably foreseeable emergency-response demands can existing County and regional capabilities meaningfully be compared against those demands.

E. Remoteness Is Relevant to Public Safety, but It Does Not Resolve the Public-Safety Inquiry

Staff relied substantially upon the site's remoteness and separation from other development in supporting ZC26-2.

Those are legitimate considerations favoring the application.

A remote location may substantially reduce exposure to nearby residential populations and may make certain industrial activities more appropriate than they would be within a populated area.

However, remoteness does not establish the absence of public-service or public-safety effects.

Depending upon the nature of the activity and incident being considered, remoteness may also affect emergency-response time, availability of specialized equipment, emergency water supply, mutual-aid

requirements, communications, transportation access, and the ability to establish protective-action areas.

Accordingly, remoteness should be evaluated as one component of the public-safety analysis rather than treated as a substitute for that analysis.

F. The Staff's 17-Mile Residential-Separation Evidence Is Relevant but Does Not Establish Separation From All Potential Public Exposure

During the Planning Commission hearing, staff explained that the closest residential use—expressly clarified as **residentially zoned A-10 property—was approximately 17 miles south on U.S. Highway 95.**

Staff relied upon that distance, together with distances from other uses, to emphasize the site's remoteness.

Appellant does not dispute the relevance of that separation.

However:

Distance from residential zoning is not necessarily equivalent to distance from all potential public exposure.

Members of the public travel U.S. Highway 95. Employees may work on commercial, industrial, agricultural or governmental properties that are not residentially zoned. Utility and transportation workers may be present in the area. Emergency responders necessarily enter an incident area.

The appropriate public-health and safety inquiry therefore cannot be resolved solely by identifying the nearest residential zoning district.

The nature and reasonably foreseeable geographic reach of a consequence must first be understood before distance can meaningfully establish whether the separation provided by this location is adequate.

G. Proximity to U.S. Highway 95 Is Relevant to Both Site Suitability and Potential Emergency Consequences

The staff report expressly relied upon legal and physical access via **U.S. 95 Lovelock Highway and/or Pole Line Road**, stating that police and fire service would be provided by those roads.

Highway access is a legitimate factor supporting industrial development and emergency access to the site.

But proximity to a transportation corridor may have two implications.

The same highway that provides beneficial industrial and emergency access may also become relevant to traffic control, incident isolation, emergency access, public notification, evacuation or shelter-in-place decisions if a reasonably foreseeable incident is capable of consequences beyond the immediate testing area.

Appellant does **not** contend that an incident at the proposed facility will close U.S. Highway 95 or require evacuation.

The evidentiary question is:

Was sufficient information available concerning the contemplated testing to determine whether effects upon U.S. Highway 95 were reasonably foreseeable and, if so, whether adequate emergency access, traffic-management and alternate-routing capabilities existed?

Where highway access was affirmatively relied upon as evidence supporting the public-services finding, reasonably relevant emergency implications of that same location could not be evaluated without sufficient information concerning the activity being served.

H. The Record Did Not Establish What a Highway Restriction or Protective-Action Area Would Mean at This Location

If an incident associated with the proposed activity were capable of requiring temporary restriction of U.S. Highway 95 or establishment of a protective-action area, the consequences would depend upon facts specific to this location.

Relevant considerations could include available alternate routes, practicality of detours, emergency access if the principal route were restricted, effects upon through traffic, access to surrounding properties, agency responsibilities, public notification, and mobilization of specialized response resources.

Appellant does not contend that the County was required to prepare a final evacuation, emergency-management or traffic-control plan before rezoning.

Rather:

Without sufficient information concerning the nature and scale of the destructive testing, the County lacked the factual basis necessary even to determine whether those considerations were reasonably material to the required public-service and public-safety findings.

I. Documented Battery Incidents Demonstrate the Limited Proposition That Battery Events Can Require Off-Site Protective Actions

Evidence concerning other battery incidents is offered for a **limited evidentiary purpose**.

It is not offered to establish that Rivian's proposed testing facility is equivalent to a battery energy-storage system, that the battery quantities are comparable, or that an incident at Rivian's facility would produce similar consequences.

The January 2025 fire at the Vistra Moss Landing battery energy-storage facility in Monterey County involved a facility materially different in purpose and scale from the use described for ZC26-2.

Nevertheless, Monterey County's official records document that the January 2025 incident resulted in the **mandatory evacuation of approximately 1,500 people and closure of State Route 1 for several days**. Monterey County's official legislative materials further identify prior battery incidents at the same general location that required emergency response and protective actions.

A September 2022 fire at the PG&E Elkhorn battery energy-storage system at Moss Landing provides another documented example. Monterey County reported that a fire in one lithium-ion Megapack resulted in a **shelter-in-place advisory and Highway 1 closure** because of potential hazardous materials. EPA and other personnel conducted air sampling before the County lifted the advisory and closure.

The significance of these incidents is not that the same outcome should be presumed in Churchill County.

They establish only the narrower proposition that:

Under some battery configurations and incident conditions, battery events can result in off-site protective actions affecting transportation corridors and surrounding areas.

Whether those considerations are material to ZC26-2 therefore depends upon the characteristics and scale of the batteries and destructive testing actually contemplated.

J. The Moss Landing Response Demonstrates Both the Potential Demand Upon Public Agencies and the Importance of Evidence-Based Public-Health Decisions

The Moss Landing experience is also informative concerning the categories of public resources that may become involved in a significant battery incident.

Monterey County documents involvement by local fire protection, regional hazardous-material personnel, environmental-health personnel, law enforcement, emergency management, state agencies and EPA. During the February 2025 reignition alone, responding and supporting entities included the North County Fire District, Monterey County Sheriff's Office, County Environmental Health and Emergency Management, Salinas Fire Department Hazmat, Marina Fire Department, Cal Fire Monterey, EPA, the National Weather Service and the regional air district.

At Monterey County's request, EPA deployed **nine air-monitoring stations** during the January 2025 incident to monitor hydrogen fluoride and particulate matter at the facility, around its perimeter and in surrounding communities.

Importantly, EPA ultimately reported that its monitoring showed **no exceedance of California's human-health standard for hydrogen fluoride and no particulate measurements exceeding the moderate air-quality level**, and concluded that its monitoring showed no public-health risk throughout the incident.

That result should not be omitted.

It demonstrates why evidence matters in both directions.

Protective actions and monitoring may be undertaken because a potential hazard warrants investigation; measurement can then establish whether the feared public-health consequence actually exists and inform decisions concerning continued protective action.

The lesson relevant to ZC26-2 is therefore neither an assumption of danger nor an assumption of safety:

Public-health and safety determinations should be based upon sufficient information to identify the reasonably foreseeable hazard and evidence appropriate to evaluate it.

K. Documented Response to the Moss Landing Incident Extended Beyond Air Monitoring

The January 2025 Moss Landing response also involved evaluation of environmental media beyond air.

Monterey County's subsequent technical review documents sampling from **air, soil, surface water and surface wipes**, both at the source property and in surrounding areas, with environmental data used for emergency response and decision-making purposes.

EPA's formal response requirements likewise addressed community debris sampling, worker and community air monitoring, water collection and containment, sampling of fire-suppression runoff, and prevention of off-site migration of potentially affected water.

Again, this evidence does not establish that Rivian's proposed activity will create comparable environmental effects.

It establishes why **distance alone cannot substitute for understanding the activity and reasonably foreseeable consequence.**

Whether a potential effect is capable of extending beyond a testing area depends upon such matters as battery characteristics, quantities, failure mode, containment and site conditions.

L. Emergency-Service Demands May Continue Beyond an Initial Battery Incident

Monterey County documented a **February 18, 2025 reignition** of damaged batteries following the January Moss Landing fire.

The County reported that the structure remained an **active hazardous-material area**, that additional reignition remained possible until damaged batteries and debris were removed, and that agencies continued monitoring the site using measures including thermal-imaging drones.

EPA likewise reports that the January fire subsided on January 18, a flare-up occurred on February 18, and subsequent response included battery delinking, site stabilization, detailed removal planning, monitoring and continued management of damaged batteries.

This evidence is not offered to predict what would occur at Rivian's proposed facility.

It demonstrates the limited proposition that, depending upon the batteries, quantities and incident characteristics involved, public-service demands can potentially extend beyond initial fire suppression to include monitoring, site control, hazardous-material management, environmental response and recovery.

Whether such considerations are material here depends upon the activity actually proposed.

M. The Public Was Not Required to Prove a Worst-Case Event

Appellant's written and oral questions concerning fire, hazardous materials, air effects, emergency response, highway impacts and other potential consequences should not be interpreted as assertions that a catastrophic event will occur.

That is not Appellant's burden.

Nor are the technical studies and documented incidents submitted with this appeal offered as predictions that Rivian's facility will experience the same events.

Their purpose is to establish **materiality**.

Federal battery-safety research establishes that battery characteristics and destructive test conditions affect failure behavior. Actual incident experience establishes that under some battery configurations and circumstances, battery events can create off-site protective actions and demands upon public services.

Accordingly, sufficient information concerning Rivian's contemplated testing was necessary to determine whether those concerns were reasonably applicable here, what level of consequence was reasonably foreseeable, and what public services or protective measures would reasonably be implicated.

The County did not need to presume a worst-case scenario, and Appellant was not required to prove one.

The County needed sufficient information to identify what consequences were reasonably foreseeable for the activity actually proposed.

N. Future SUP Review Does Not Supply the Evidentiary Basis for a Finding Already Made

A future SUP proceeding may provide precisely the information necessary to answer many of these questions.

It may identify testing methods, battery quantities and characteristics, containment systems, emergency-response plans, fire-protection measures, transportation controls, hazardous-material procedures and operational conditions.

That later review is important.

But, as established more fully in Ground II, the existence of future review does not itself constitute evidence supporting an affirmative finding required at the zoning stage.

The hearing record makes the timing issue particularly clear.

At approximately **46:39–47:06**, the Commission was told that later site-specific review would examine matters affecting neighboring public health, safety and welfare. At approximately **47:44–48:14**, the Commission nevertheless moved to find that the criteria under CCC §16.08.060(E) had been met.

Appellant does not contend that the later review should have been conducted during ZC26-2.

The issue is whether the record contained sufficient evidence to support the affirmative public-service and public-health, safety and welfare determinations **when those determinations were made**.

O. Requested Determination Under Ground V

For these reasons, Appellant respectfully requests that the Board determine that the existing record did not contain sufficient information concerning the nature and scale of the proposed destructive battery

testing to substantiate the required determinations concerning public services and facilities and public health, safety and welfare.

Appellant does not request that the Board presume destructive battery testing is unsafe, conclude that a significant incident will occur, assume that Churchill County's emergency responders are unprepared, or require completion of SUP-level emergency planning before rezoning.

Rather, Appellant requests sufficient planning-level information to determine:

what hazards and public-service demands are reasonably foreseeable; what geographic area could reasonably be affected; what emergency-response capabilities, training and equipment those hazards may require; whether transportation infrastructure including U.S. Highway 95 could reasonably be implicated; and whether existing or planned County and regional resources are adequate to address those demands.

Where that factual basis has not been established, Appellant respectfully requests that the Board **reverse the Planning Commission's recommendation on the present evidentiary record or, alternatively, remand or continue the matter until an adequate evidentiary record concerning public services, public health, safety and welfare has been developed and considered before the required affirmative findings are made.**

GROUND VI — THE APPROPRIATE-USE AND COMPATIBILITY DETERMINATIONS WERE NOT SUPPORTED BY SUFFICIENT EVIDENCE

A. Appropriate Use and Compatibility Are Independent Rezoning Considerations

CCC §16.08.060(E)(1), as implemented through Churchill County's zoning-amendment criteria, requires the applicant to address, among other matters:

“The change in zoning provides for an appropriate use of the land.”

The County's criteria separately require consideration of whether:

“The proposed zoning and project is sensitive to and compatible with the use and development of the adjacent properties.”

In addition, the Planning Commission's required findings include whether:

“The proposed amendment will provide for land uses compatible with existing adjacent land uses and will not have detrimental impacts to other properties in the vicinity.”

These are distinct considerations within the County's zoning-amendment framework. The applicant's evidentiary showing expressly addresses both the **proposed zoning and project**, while the Planning Commission must make an affirmative finding concerning compatible land uses and detrimental impacts before recommending approval.

Accordingly, evidence that the property lies within an Industrial Master Plan designation is relevant to appropriate use and compatibility, but does not by itself resolve those separate inquiries.

The question under this Ground is whether the record contained sufficient evidence supporting the determination that the requested **I-3 Heavy Industrial zoning and stated project** were appropriate at this location and compatible with adjacent properties and surrounding development.

B. The Record Contains Legitimate Evidence Supporting Industrial Development at This Location, but That Evidence Does Not Complete the Required Compatibility Analysis

The staff report identified several legitimate considerations supporting industrial development at this location.

The property lies within the Industrial Master Plan designation. Staff identified nearby industrial or transportation-related uses, including a railroad approximately 500 feet away, a mineral extraction and processing facility approximately two miles away, Trinity Junction approximately seven miles away, the U.S. Navy bombing range approximately eleven miles away, and Kennametal approximately thirteen miles away. Staff also noted previously approved explosive-storage and geothermal-exploration special use permits approximately seven miles away.

Staff further emphasized that neighboring parcels were vacant, that the area was remote, that the closest residentially zoned A-10 parcel was approximately seventeen miles away, and that staff observed no residential uses within several miles along U.S. Highway 95 and Pole Line Road. Based upon those

considerations, staff concluded that the proposed zone change was compatible with neighboring vacant, primarily federal lands.

Appellant does not dispute that these facts are relevant evidence favoring the requested amendment.

The issue is narrower.

The County's evidentiary criterion does not ask solely whether **industrial development generally** could be appropriate in the area. It expressly asks whether the **“proposed zoning and project”** are sensitive to and compatible with adjacent properties.

Here, the applicant identified **destructive battery testing** as the reason the existing zoning was inadequate and stated that:

“Destructive battery testing is best served in remote and rural areas.”

The applicant therefore relied upon the stated project both to establish why the zoning amendment was necessary and why the requested zoning represented an appropriate use of the land.

Yet, as established in Grounds I, II and V, the record did not establish sufficient information concerning the nature and scale of that activity to evaluate those characteristics of the stated project that could reasonably be material to compatibility.

Thus, the record contains legitimate evidence explaining why **industrial development generally may be appropriate in this area**, but that does not necessarily complete the County's separate inquiry concerning the compatibility of the **requested zoning and stated project**.

C. The Compatibility Inquiry Is Not Limited Solely to Rivian's Presently Stated Project

ZC26-2 does not merely authorize one specific Rivian operation.

It changes approximately **218.57 acres from RR-20 Rural Resource District to I-3 Heavy Industrial District**.

Churchill County's current planning guidance explains that a property's zoning district determines the uses allowed on the property and directs landowners and applicants to CCC §16.08.250's Land Use Table to determine whether particular uses are allowed or prohibited and what level of review applies.

The County staff report itself likewise states, immediately after quoting the purpose of the I-3 district:

“Specific land uses are listed in the land use table under section 16.08.250 of this Title.”

That distinction matters.

A zoning-map amendment changes the regulatory classification of the land. It is therefore not equivalent to approval of only the applicant's presently stated project.

Appellant does not contend that the Planning Commission was required to individually analyze every conceivable use appearing in the I-3 Land Use Table.

The narrower point is:

Compatibility cannot reasonably be treated as limited solely to Rivian's presently stated use when the governmental action being taken changes the land itself to I-3 Heavy Industrial and thereby establishes the zoning framework governing the uses available on that property.

Accordingly, the compatibility inquiry should account for the **character and material range of uses enabled by the requested I-3 classification**, rather than treating compatibility as solely a project-specific question that can be deferred entirely to a later SUP.

This is particularly important because the County's own criterion expressly refers to both the **“proposed zoning and project.”**

D. Remoteness and Separation Are Relevant Evidence, but They Do Not Independently Establish Compatibility

The property's remoteness, vacant neighboring parcels, separation from residential zoning, and proximity to other industrial or transportation-related uses are relevant evidence supporting compatibility.

Appellant does not ask the Board to disregard that evidence.

But compatibility is relational.

It requires consideration of the character of the zoning and land use being introduced in relation to adjacent properties and surrounding development.

Distance can reduce potential conflicts and therefore weigh strongly in favor of compatibility. But distance does not, by itself, identify the characteristics of the zoning or project being evaluated.

Similarly, an Industrial Master Plan designation establishes that industrial development is contemplated in the area, but it does not necessarily establish that every industrial zoning classification has identical compatibility characteristics.

The issue under this Ground is therefore not whether I-3 zoning **can** be compatible at this location.

It is whether the record contained substantial evidence supporting the affirmative determination that the **requested I-3 zoning and stated project were compatible at this location** under the criteria Churchill County itself adopted.

E. The Requested Amendment Is to I-3 Heavy Industrial, Not Merely to an Undifferentiated “Industrial” Classification

This distinction is particularly significant because Churchill County's own definition of the requested zoning district recognizes characteristics relevant to compatibility.

The staff report quotes CCC §16.08.214 as defining the Heavy Industrial District (I-3) as follows:

“The purpose of this district is to provide for heavy industrial activities and land uses that have the great potential for impacting adjacent land uses and infrastructure. This type of zoning should be located away from people and other non-industrial uses, and uses within it may have to develop their own access to roadway and/or railway transportation systems.”

The County therefore does not treat all industrial zoning classifications as interchangeable.

The I-3 district exists specifically for **heavy industrial activities**, and the district's own purpose recognizes that uses within it have greater potential to affect adjacent land uses and infrastructure.

The applicant likewise demonstrated that the distinction between general industrial development and I-3 zoning mattered to this application by identifying destructive battery testing as an activity the existing zoning did not permit and as the reason the requested change was necessary.

Accordingly, evidence showing that the Master Plan contemplates **industrial development generally** in this location is relevant but does not eliminate the separate question:

What evidence establishes that I-3 Heavy Industrial is the appropriate zoning classification for these approximately 218.57 acres and that the proposed I-3 zoning and stated project are sensitive to and compatible with adjacent properties?

Staff answered that question principally through remoteness, vacant neighboring lands, separation from residential zoning, proximity to other industrial-type uses, and consistency with the Industrial Master Plan designation.

Those facts are relevant and should be weighed by the Board.

But where the I-3 district itself is defined by its greater potential to affect adjacent land uses and infrastructure, and where the stated project was relied upon to justify the need and appropriateness of that classification, Appellant respectfully contends that the Board should determine whether those generalized location characteristics supplied sufficient evidence to support the **specific compatibility determination required for I-3 zoning and the stated project**.

F. Requested Determination Under Ground VI

For these reasons, Appellant respectfully requests that the Board independently evaluate the appropriate-use and compatibility criteria applicable to ZC26-2 rather than treating the Industrial Master Plan designation, remoteness, vacant neighboring lands, separation from residential zoning, or presence of other industrial-type uses as independently dispositive.

Those considerations constitute relevant evidence favoring the requested amendment.

The question is whether, taken together with the remainder of the record, they constitute substantial evidence supporting the County's more specific required determinations concerning:

the appropriateness of the requested I-3 Heavy Industrial classification; the compatibility of the proposed zoning and stated project with adjacent properties; and the absence of detrimental impacts to other properties in the vicinity.

Appellant does not ask the Board to determine that I-3 zoning is categorically incompatible with this location.

Nor does Appellant ask the Board to determine that destructive battery testing cannot appropriately occur here.

The requested determination is narrower:

Where the County's own criteria require consideration of the proposed zoning and project, and where the I-3 district itself is defined as accommodating heavy industrial activities having great potential to affect adjacent land uses and infrastructure, the affirmative compatibility determination should rest upon substantial evidence concerning the specific zoning classification and those characteristics of the stated project materially relevant to compatibility—not solely upon evidence that industrial development generally is contemplated in the area.

Where the present record does not provide an adequate evidentiary basis for those determinations, Appellant respectfully requests that the Board **reverse the Planning Commission's recommendation on the present evidentiary record or, alternatively, remand or continue the matter until sufficient evidence has been developed and considered to support the required appropriate-use and compatibility determinations.**

SECTION V — REQUESTED RELIEF

For the reasons set forth in Sections I–III and Grounds I–VI of this Appeal, Appellant respectfully requests that the Churchill County Board of Commissioners grant the following relief.

This Appeal does not ask the Board to determine that destructive battery testing is inherently inappropriate, that I-3 Heavy Industrial zoning can never be appropriate at this location, that the proposed project cannot ultimately obtain adequate infrastructure or public services, or that the project can never satisfy Churchill County's applicable land-use requirements.

The issue presented is narrower:

Whether the evidentiary record presently before the County contains substantial evidence sufficient to support the affirmative findings required for approval of ZC26-2.

For the reasons established in this Appeal, Appellant respectfully contends that it does not.

A. Reverse the Planning Commission's Recommendation

Appellant respectfully requests that the Board **reverse the Planning Commission's recommendation approving ZC26-2** because the record before the Planning Commission did not contain substantial evidence sufficient to support the affirmative findings required under CCC §16.08.060(E).

As established in Grounds I–VI, the challenged findings concern distinct but related requirements, including the sufficiency of the evidentiary record, information deferred to later project review, Master Plan conformity, adequacy of services and infrastructure, effects upon public services and facilities and public health, safety and welfare, and the appropriate-use and compatibility determinations applicable to the requested zoning amendment.

The applicant bears the burden of providing adequate facts supporting the requested zoning amendment. Where information material to the required findings was not established in the record, the existence of future SUP, engineering, permitting, or project-specific review did not itself supply substantial evidence supporting affirmative findings made at the rezoning stage.

Accordingly, Appellant respectfully requests reversal of the Planning Commission's recommendation **on the present evidentiary record.**

B. Deny ZC26-2 on the Present Evidentiary Record

Following reversal of the Planning Commission's recommendation, Appellant respectfully requests that the Board **deny ZC26-2 on the present evidentiary record.**

This requested denial is expressly based upon the sufficiency of the record supporting the zoning amendment presently before the Board.

Appellant does not request a determination that the subject property can never appropriately be rezoned to I-3, that destructive battery testing is categorically incompatible with the location, that the proposed project is inherently unsafe, that adequate water or other infrastructure cannot ultimately be obtained, or

that a future application supported by a materially different or more complete evidentiary record could never satisfy Churchill County's requirements.

Rather:

Appellant seeks denial based upon the sufficiency of the present record—not a determination that the proposed use is inherently unacceptable or can never satisfy Churchill County's requirements.

The distinction is important because the issue before the Board is whether the affirmative findings required for **this zoning amendment, on this record, at this time** are supported by substantial evidence.

Appellant respectfully contends that they are not.

C. Alternatively, Remand the Matter for Further Evidentiary Development Before the Required Zoning Findings Are Made

If the Board determines that outright denial is not appropriate, Appellant alternatively requests that the Board **remand ZC26-2 for further evidentiary development and consideration before the required affirmative zoning findings are made.**

The purpose of remand would not be to require completion of the future SUP proceeding, final engineering, construction plans, final emergency-response plans, adjudication of water rights, or every project-specific approval that may properly occur later.

Rather, the purpose would be to obtain sufficient **planning-level evidence** to permit meaningful evaluation of those matters Churchill County requires to be considered at the zoning-amendment stage.

As applicable to the deficiencies identified in Grounds I–VI, that evidentiary development should include sufficient information to evaluate:

- the nature and reasonable scale of the proposed destructive battery-testing activity to the extent material to the required zoning findings;
- the factual basis supporting conformity with applicable Master Plan goals, policies and land-use considerations;
- anticipated water demand and the expected permanent water source;
- anticipated electrical demand and the infrastructure reasonably capable of serving that demand;
- anticipated wastewater requirements and the proposed means of providing permanent wastewater service;
- other services and infrastructure reasonably required by the proposed land use;
- reasonably foreseeable demands upon fire, emergency medical, hazardous-material, law-enforcement and other public services;
- public-health, safety and welfare considerations reasonably implicated by the nature and scale of the proposed activity;

- the compatibility and appropriateness of the requested I-3 Heavy Industrial zoning and stated project in relation to adjacent properties and surrounding development; and
- such other planning-level information as is reasonably necessary to support the findings required under CCC §16.08.060(E).

Appellant does not contend that each of these subjects requires a separate technical study or final project design.

The appropriate level of information depends upon the finding being made.

The purpose of remand is simply to ensure that:

Enough evidence exists at the zoning stage to support the determinations required at the zoning stage.

Once that information has been developed and considered, the appropriate decision concerning ZC26-2 can be made upon an evidentiary record sufficient to support the required findings.

D. Consider the Supplemental Evidence Submitted With This Appeal Concerning Issues Preserved Before the Planning Commission

Appellant respectfully requests that the Board consider the supplemental evidence submitted with this Appeal to the extent it concerns issues that were raised in written or oral comment before the Planning Commission acted.

The supplemental materials are not offered to transform this administrative appeal into an entirely new proceeding or to introduce unrelated objections that the Planning Commission had no opportunity to consider.

They are submitted to **substantiate, clarify and provide authoritative support for issues already raised before the Planning Commission**, including questions concerning the evidentiary basis for the required findings, Master Plan conformity, water and infrastructure, public services, public health and safety, emergency response, compatibility, and the consequences of deferring material information to later review.

Churchill County's appeal procedure permits the Board to consider relevant additional evidence pertaining to issues raised in the proceedings below when necessary to render a decision based upon substantial evidence.

Accordingly, Appellant respectfully requests that the Board consider the supplemental materials together with the Planning Commission record when determining whether the challenged findings are supported by substantial evidence.

Where supplemental evidence demonstrates that a factual proposition relied upon below requires qualification, additional investigation, or further evidentiary support, Appellant respectfully requests that the Board address that issue before making the corresponding affirmative zoning finding.

E. If the Board Approves ZC26-2, Identify the Evidentiary Basis for Each Challenged Finding

If the Board determines that ZC26-2 should nevertheless be approved, Appellant respectfully requests that the Board expressly identify the evidence upon which it relies in determining that the challenged zoning criteria have been satisfied.

This request does not contend that Churchill County Code requires the Board to issue a separate written evidentiary opinion addressing each item of evidence.

Rather, Churchill County's zoning framework requires the applicable approval findings to be satisfied, and its appeal procedure requires the Board to consider relevant evidence necessary to render a decision based upon substantial evidence.

Because this Appeal specifically challenges the evidentiary basis for several required findings, Appellant respectfully requests that, if the Board determines those findings are nevertheless satisfied, the evidentiary basis for each challenged finding be expressly identified so that the findings and substantial-evidence basis for the Board's final decision are clearly reflected in the administrative record.

Specifically, Appellant requests identification of the evidence relied upon to determine:

1. **that the applicant provided adequate facts supporting the requested zoning amendment and that the required findings are supported by substantial evidence;**
2. **that information deferred to later SUP or project-specific review was not necessary to substantiate findings required at the rezoning stage, or that other evidence in the present record independently supports those findings;**
3. **that ZC26-2 conforms to the Churchill County Master Plan and the applicable goals, policies and land-use considerations identified in this Appeal;**
4. **that adequate services and infrastructure are available to support the proposed land use, including the evidentiary basis concerning anticipated demand and the services and infrastructure reasonably capable of meeting that demand;**
5. **that the proposed amendment will not negatively impact existing or planned public services or facilities and will not adversely impact public health, safety and welfare; and**
6. **that the requested I-3 Heavy Industrial zoning constitutes an appropriate use of the land and that the proposed zoning and project are sensitive to and compatible with adjacent properties and surrounding development.**

Appellant respectfully requests this identification not to impose a standard beyond that applicable to the Board's decision, but to ensure that the administrative record clearly reflects **what evidence the Board determined satisfied the findings specifically challenged in this Appeal.**

F. Requested Disposition

Accordingly, Appellant respectfully requests that the Churchill County Board of Commissioners:

reverse the Planning Commission's recommendation approving ZC26-2 and deny the requested zoning amendment on the present evidentiary record;

or, alternatively,

remand ZC26-2 for further evidentiary development and consideration sufficient to support the findings required at the zoning-amendment stage before an affirmative decision on the requested amendment is made.

If the Board instead determines that ZC26-2 should be approved, Appellant respectfully requests that the Board **identify on the record the substantial evidence supporting each challenged finding**, including the evidentiary basis upon which the Board resolves the deficiencies specifically identified in Grounds I–VI.

The relief requested is intended to preserve the legitimate functions of both the zoning-amendment and later project-review processes.

It does not require final project approval to occur during rezoning.

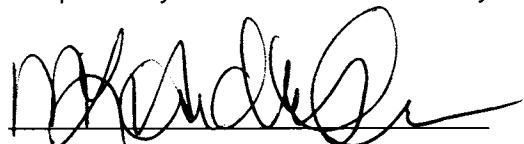
It requires only that:

The determinations Churchill County requires at the zoning stage be supported by sufficient evidence at the zoning stage.

For the reasons set forth in this Appeal, Appellant respectfully requests that the Board grant the relief stated above.

RESPECTFULLY SUBMITTED

Respectfully submitted this 20th day of August, 2026.

A handwritten signature in black ink, appearing to read 'Michelle Anderson', written over a horizontal line.

Michelle Anderson

Appellant

EXHIBIT INDEX

Administrative Appeal of Churchill County Planning Commission Recommendation ZC26-2 — APN 004-431-44 — RR-20 to I-3 Heavy Industrial

Exhibit	Title	Contents / Relevance
1	Churchill County Planning Commission — Official Agenda Packet, ZC26-2 Record	August 12, 2026 agenda identification and complete contiguous ZC26-2 County-record segment, including staff/applicant materials and written public comment.
2	Churchill County Planning Commission — August 12, 2026 Meeting Transcript, ZC26-2 Hearing and Closing Public Comment	Complete ZC26-2 hearing segment plus Appellant's additional closing public comment.
3	Churchill County Governing Zoning-Amendment and Administrative-Appeal Standards	Official County rezone application/instructions, applicable findings, applicant burden, and administrative-appeal standards.
4	Churchill County 2020 Master Plan — Applicable Provisions and Policy Cross-Reference Matrix	Master Plan provisions and policies materially relied upon in the appeal, with Appellant-prepared cross-reference matrix.
5	Basin 101 / Carson Desert — NDWR and Churchill County Water Evidence	NDWR GIS/basin materials and Churchill County water-planning evidence relevant to permanent water source, demand, rights, and infrastructure.
6	Churchill County Multi-Jurisdictional Hazard Mitigation Plan	Hazardous-materials, emergency-response, and County capability provisions relevant to Grounds III and V.
7	Sandia National Laboratories — Lithium-Ion Battery Thermal-Runaway, Chemistry, State-of-Charge and Failure-Propagation Evidence	Technical evidence concerning variables affecting lithium-ion thermal behavior and failure propagation; relevant to Ground V.
8	Churchill County August 12, 2026 Agenda Packet — Sand Creek Subdivision #2, Phase 1 (PC26-10), Services and Infrastructure Comparison	Same-meeting County evidence illustrating planning-level evaluation of services and infrastructure while later engineering remained outstanding.
9	County Rezone Instructions, I-3 District Purpose, Development Standards, and Land Use Table	County Code and rezone materials relevant to permanent I-3 zoning scope, compatibility, development standards, and future-use analysis.
10	Moss Landing Battery Incidents — Official Monterey County and U.S. EPA Evidence	Official incident, response, monitoring, preparedness, and environmental-sampling evidence relevant to Ground V, Sections H-K.
11	City of Reno v. Citizens for Cold Springs, 126 Nev. 263, 236 P.3d 10 (2010)	Nevada Supreme Court authority relevant to the present-finding / later-development distinction in Grounds II and IV.
12	Eureka County v. State Engineer, 131 Nev. 846, 359 P.3d 1114 (2015)	Nevada Supreme Court authority concerning presently known substantial evidence, later-developed information, opportunity to challenge evidence, and judicial review; relevant to Grounds II and IV.

Note: Exhibit descriptions are provided for navigation only. The exhibit cover sheets and source materials control as to scope, purpose, limitations, and source attribution.

EXHIBIT 1

CHURCHILL COUNTY PLANNING COMMISSION OFFICIAL AGENDA PACKET — ZC26-2 RECORD EXCERPTS

August 12, 2026

APN 004-431-44 — Rivian / Arcadis, Inc.

Requested Zone Change: RR-20 to I-3 Heavy Industrial

Source: Official Churchill County Planning Commission Agenda Packet, August 12, 2026.

For completeness and record preservation, this exhibit includes the agenda identification page and the complete contiguous ZC26-2 portion of the County packet from original packet pages 493 through 520. This preserves the County staff materials, maps and figures, applicant materials, agency/public-notice materials, and the complete County-record copy of the written public comment submitted August 7, 2026.

Original packet page numbers and original visual content are preserved. Yellow highlighting has been added only to selected County/applicant passages and the public-comment transmission metadata to assist navigation. The substance of the written public comment itself is reproduced in full and is not selectively highlighted.

Included original packet pages: 2 and 493–520.

5. **Verification of notification of all landowners in accordance with NRS and the Churchill County Consolidated Development Code**
6. **Consideration and possible action re: Approval of Minutes of the meeting held on**
 - A July 8, 2026 Public Hearing
7. **Old Business**
 - A. Update on Nevada Department of Transportation (NDOT) improvements to highway, commercial sidewalk and encroachments along Reno Highway in Churchill County.
8. **New Business:**
 - A. Consideration and possible action re: A home business special use permit application, SUP26-17, filed by Dana & Barbara Hutchison. The property is located at 1300 Lattin Road, Assessor's Parcel Number 010-581-27, in the E-1 zoning district. The applicant proposes to operate a home based sewing, tailoring & crafts business with occasional customer traffic.
 - B. Consideration and possible action re: A parcel map application, PC26-9, filed by JDLN Enterprises LLC. The property is at 9900 Carson Highway, Assessor's Parcel Number, 007-171-75, in the I-2 zoning district. The applicant proposes to divide the parcel into two lots.
 - C. Consideration and possible action re: A final subdivision map for Sand Creek #2, Phase 1, PC26-10, filed by Casey Road LLC. The property is south of Casey Road, Assessor's Parcel Numbers 008-792-11 and 008-792-95, in the R-1 zoning district. The applicant submits Phase 1 final subdivision map to implement the tentative map that was approved by the Board of County Commissioners on November 10, 2025 and to create 25 lots.
 - D. Consideration and possible action re: An abandonment of easement application, AE26-4, filed by Casey Road LLC. The property is south of Casey Road, Assessor's Parcel Numbers 008-792-11 and 008-792-95, in the R-1 zoning district. The applicant proposes to abandon the 50' portion of the road easement shown on sheet 3 of 5 of the Final Map of Sand Creek Subdivision. The 50' easement is to be replaced with dedicated roadways on the proposed Sand Creek Subdivision Map #2, Phase 1.
 - E. Consideration and possible action re: A zone change application, ZC26-2, filed by Mary Heapy of Arcadis, Inc. for Rivian. The property is located on the Lovelock Highway (Highway 95 North), Assessor's Parcel Number 004-431-44, in the RR-20 zoning district. The applicant proposes to change the zoning from RR-20 to I-3.
9. **Consent Agenda:**

All matters listed under the Consent Agenda are considered routine and may be acted upon by the Board of County Commissioners with one action and without an extensive hearing. Any member of the board or any citizen may request that an item be taken from the Consent Agenda, discussed and acted upon separately during this meeting.

 - A Consideration and possible action re: Discontinuation of review of special use permit, SUP25-15, previously granted on June 11, 2025 to Creekwood Homes for a manufactured home dealership. The property is located at 3981, 3977 & 3943 Reno Highway, Assessor's Parcel Numbers 008-411-40, 008-411-41 & 008-411-42, in the C-1 zoning district. The conditions for approval have been verified by staff to be completed.



Churchill County Agenda Report

Date Submitted: July 14, 2026

Agenda Item #: New Business -
Meeting Date Requested: August
12, 2026

To: Planning Commission

From:

Subject Title: Consideration and possible action re: A zone change application, ZC26-2, filed by Mary Heapy of Arcadis, Inc. for Rivian. The property is located on the Lovelock Highway (Highway 95 North), Assessor's Parcel Number 004-431-44, in the RR-20 zoning district. The applicant proposes to change the zoning from RR-20 to I-3.

Type of Action Requested: Recommend approval to the Board of County Commissioners

Does this action require a Business Impact Statement? No

Recommend Board Action: Based on the information provided in the application, in the staff report, and heard tonight, I move to find that the **criteria found in CCC 16.08.060(E) have been met for Zone Change application, ZC26-2, to change the zoning of a 218.57-acre parcel from RR-20 to I-3** at Assessor's Parcel Number 004-431-44 and therefore recommend that the Board of County Commissioners approve the zone change application.

Discussion: Executive Summary
Staff Recommendation: Approve

Request

The applicant is requesting to change a 218.57-acre parcel from Rural Resource (RR-20) to Heavy Industrial (I-3). The site is approximately 7-miles south of the Trinity Junction interchange. **The applicant intends to establish a destructive battery testing use.** RR-20 zoning districts does not permit an Explosive or Combustible Materials testing facility. **I-3 zoning districts permits an Explosive or Combustible Materials Testing use with an approved Special Use Permit.**

Alternatives: Recommend denial of the application or make changes as needed.

Fiscal Impact:

Explanation of Impact:

Funding Source:

Prepared By: Diane Moyle, Administrative Assistant

The submission of this agenda report by county officials is not intended, necessarily, to reflect agreement as to a particular course of action to be taken by the board; rather, the submission hereof is intended, merely, to signify completion of all appropriate review processes in readiness of the matter for consideration and action by the board.



Churchill County Agenda Report

Reviewed By:

Randy Hines, Public Works Director

Date: July 30, 2026

Board Action Taken:

Motion: _____

1) None _____

Aye: _____

2) None _____

Nay: _____

(Vote Recorded By)

The submission of this agenda report by county officials is not intended, necessarily, to reflect agreement as to a particular course of action to be taken by the board; rather, the submission hereof is intended, merely, to signify completion of all appropriate review processes in readiness of the matter for consideration and action by the board.



CHURCHILL COUNTY PUBLIC WORKS, PLANNING & BUILDING

Application:	Zone Change	Application #:	ZC26-2
Request:	To change the zoning of a 218.57-acre parcel from RR-20 to I-3		
Applicant:	Rivian, Arcadis Inc., Mary Heapy & Matthew Usbeck		
Owner:	New Nevada Lands LLC, Health A Rushing		
Site:	Assessor's Parcel Number 004-431-44		
Master Plan//Zone:	Agriculture // A-10		

Executive Summary

Staff Recommendation: Approve

Motion for Findings

Based on the information provided in the application, in the staff report, and heard tonight, I move to find that the criteria found in CCC 16.08.060(E) have **BEEN** met for **Zone Change**, ZC26-2, to change the zoning of a 218.57-acre parcel from RR-20 to I-3 at Assessor's Parcel Number 004-431-44 and therefore recommend that the Board of County Commissioners **APPROVE** the zone change application.

Request

The applicant is requesting to change a 218.57-acre parcel from Rural Resource (RR-20) to Heavy Industrial (I-3). The site is approximately 7-miles south of the Trinity Junction interchange. The applicant intends to establish a destructive battery testing use. RR-20 zoning districts does not permit an Explosive or Combustible Materials testing facility. I-3 zoning districts permits an Explosive or Combustible Materials Testing use with an approved Special Use Permit.

Findings

CCC 16.08.060(E) requires that the Planning Commission make the following findings prior to forwarding the Board of County Commissions a recommendation of approval:

- a) **That the proposed amendment is in substantial compliance with and supports the goals and policies of the master plan;**
Staff Comment: The proposed zone change substantially complies with the Master Plan. It supports 4 goals and 5 polices as outlined in the detailed analysis below.
- b) **That the proposed amendment will provide for land uses compatible with existing adjacent land uses and will not have detrimental impacts to other properties in the vicinity;**
Staff Comment: The proposed zone change is in an undeveloped area within the Industrial Master Plan designation. The closest uses are mineral extraction and processing and the US Naval bombing range, which are both industrial in nature. The proposed zoning is compatible with the adjacent land uses and properties.
- c) **That the proposed amendment will not negatively impact existing or planned public services or facilities and will not adversely impact the public health, safety and welfare.**
Staff Comment: Churchill County has no planned public services and facilities in the area. The subject parcel has legal and physical access via US 95 Lovelock Highway and/or Pole Line Road. Police and fire service will be provided via these roads. The proposed zone change will not adversely impact public health, safety, and welfare or negatively impact existing public services or facilities.

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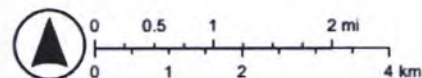
CHURCHILL COUNTY PUBLIC WORKS, PLANNING & BUILDING

Detailed Analysis

Vicinity and Zone Change Map



Note: Project Parcel and surrounding parcels are zoned Rural Resource District (RR-20)



Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Earthstar Geographics

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CHURCHILL COUNTY PUBLIC WORKS, PLANNING & BUILDING

Applicant Evidence

The applicant is required to provide evidence to the commission and board concerning the physical use of land and zoning currently existing in the general vicinity, and which have occurred in the previous five years per CCC 16.08.060(E)1 on the following topics:

1) *How growth and/or other development factors in the community support a change in the land use.*

The Applicant – The current zoning does not allow for destructive battery testing, and the parcel is in a remote area. It falls within the industrial planning area on the Master Land Use Plan.

2) *The change in land use represents orderly development and that adequate services and infrastructure to support the proposed land use area available in the area.*

The Applicant – The remote nature of the site will require minimal, isolated utility demands. Initial utilities for the site will be temporary to start with permanent power, water, and septic to come later.

3) *The change in zoning provides for an appropriate use of the land.*

The Applicant – Destructive battery testing is best served in remote and rural areas. The proposed change is in keeping with the isolated nature of the area. The surrounding lots are vacant. The proposed zone change is over 200 acres and is in conformance with the intended master plan land use of Industrial.

4) *The proposed zoning is in substantial conformance with the master plan and other adopted plans and policies.*

The Applicant – The proposed zone change aligns with the county's land use goals and policies. It establishes industrial uses within the Industrial designation on the Master Plan (LU 2.5). It is along a major highway (LU 2.7). It will provide industrial employment to the area (LU 5). And it infills federal "checkerboarding" with industrial uses (LU5.2).

5) *The proposed zoning and project is sensitive to and compatible with the use and development of the adjacent properties.*

The Applicant – The proposed parcel is in a remote area with no nearby commercial or residential uses. Surrounding lands are vacant and undeveloped. The proposed I-3 zoning is consistent with this land use pattern.

Analysis

The Planning Commission is required to make the following three findings in compliance with CCC 16.08.060(E):

1) *The proposed amendment is in substantial compliance with and supports the goals and policies of the master plan:*

The following nine (9) goals and policies are most relevant to the proposed zone change to Heavy Industrial (I-3) zoning:

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CHURCHILL COUNTY PUBLIC WORKS, PLANNING & BUILDING

Goal/ Policy	Text	Staff Comment
ED9	Establish industrial uses as a fourth pillar of the economy	The proposed zone change encourages industrial development where the county's Master Plan intends.
ED9.1	The County will continue to coordinate with landowners, developers, and industrial businesses to identify suitable industrial areas along major highways and railways.	The proposed zone change is in an industrial designated area alongside US 95 Lovelock Highway
ED 9.2	The County will continue to work toward providing additional industrial and manufacturing employment opportunities, and attracting a greater variety of industries into the area.	Industrial zoning in this area will help attract industries such as electric battery testing to the area.
T13.2	Legal and physical access shall be established prior to approval of development plans. Easements shall be provided as outlined in Churchill County Code and Uniform Fire Code.	The site has legal and physical access via US 95 Lovelock Highway.
LU1	Retain the rural character of the County outside of the Urbanizing and Industrial land use designations, while providing opportunities for managed growth and development within Urbanizing and Industrial designations.	The proposed zone change is within the Industrial Master Plan designation area.
LU 3	Development shall be beneficial to the County and shall promote sustainability.	The proposed zone change will create an industrial cluster near the Trinity Junction interchange. This will result in an expanded tax base with minimal disruption to existing agricultural and residential uses.
LU5	Encourage industrial expansion that is supportive of economic development and jobs creation.	The proposed zone change will create new industrial uses such as battery testing and solar power generation.
LU5.1	Undertake projects to reduce obstacles to broad development of industrial lands, especially in the Hazen-Swingle Bench Special Planning Area.	The proposed zone change will enable industrial uses to be established where the county's Master Plan intends.
LU6.2	Locate commercial and industrial zones to better separate commercial uses from industrial activity	The proposed zone is located approximately 24 miles from the closest Commercial District (C-1).

2) That the proposed amendment will provide for land uses compatible with existing adjacent land uses and will not have detrimental impacts to other properties in the vicinity;

The applicant is proposing to change 218.57 acres of Rural Resource District (RR-20) to **Heavy Industrial District (I-3)**. Churchill County Code 16.08.220 defines **Heavy Industrial District (I-3)** as:

*16.08.214 **Heavy Industrial District (I-3)** -The purpose of this district is to provide for heavy industrial activities and land uses that have the **great potential for impacting adjacent land uses and infrastructure.** This type of*

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CHURCHILL COUNTY PUBLIC WORKS, PLANNING & BUILDING

zoning should be located away from people and other non-industrial uses, and uses within it may have to develop their own access to roadway and/or railway transportation systems. Refer to section 14.04.030 of this Code and section 16.16.020 of this title for additional regulations that might affect uses in this district. Specific land uses are listed in the land use table under section 16.08.250 of this Title.

The neighboring parcels are vacant. The closest uses to the proposed zone change include the railroad (~500ft), a mineral extraction and processing facility operated by Barium Inc (~2 miles), Trinity Junction (~7 miles), the US Navy bombing range (~11 miles), and Kennametal (~13 miles). Churchill County has also approved explosive storage, and geothermal exploration special use permits approximately 7 miles away. These uses are either industrial or transportation uses. The proposed I-3 district will have minor impacts on the adjacent uses.

The Heavy Industrial District's (I-3) purpose states that the district should be located away from people and other non-industrial uses. The proposed zone change is approximately 17 miles from the closest residentially zoned (A-10) parcel. There may be some residential properties located closer. However, staff did not see any residential uses within several miles of the site along US 95 and Pole Line Road. Therefore, the proposed zone change is compatible with the neighboring vacant, primarily Federal, lands.

Further, the proposed zone change will not have detrimental impacts on other properties in the or constitute spot zoning. The proposed amendment is changing a large area (218.57 acres) to a use that is similar to nearby industrial uses. The proposed zone is within the intended industrial area outlined in the Master Plan, as shown below (Exhibit 1).

3) That the proposed amendment will not negatively impact existing or planned public services or facilities and will not adversely impact the public health, safety and welfare.

Churchill County does not have any existing or planned public services or facilities in this area. Public services, such as police and fire, will be provided via US 95 Lovelock Highway.

The applicant plans to use the existing physical and legal access off US 95 Lovelock Highway and/or Pole Line Road. However, Pole Line Road is not currently maintained by Churchill County. This satisfies the requirements under Master Plan policy T13.2:

Legal and physical access shall be established prior to approval of development plans. Easements shall be provided as outlined in Churchill County Code and Uniform Fire Code.

The proposed zone change will not negatively impact existing or planned public services. It will also not adversely impact public health, safety, and welfare.

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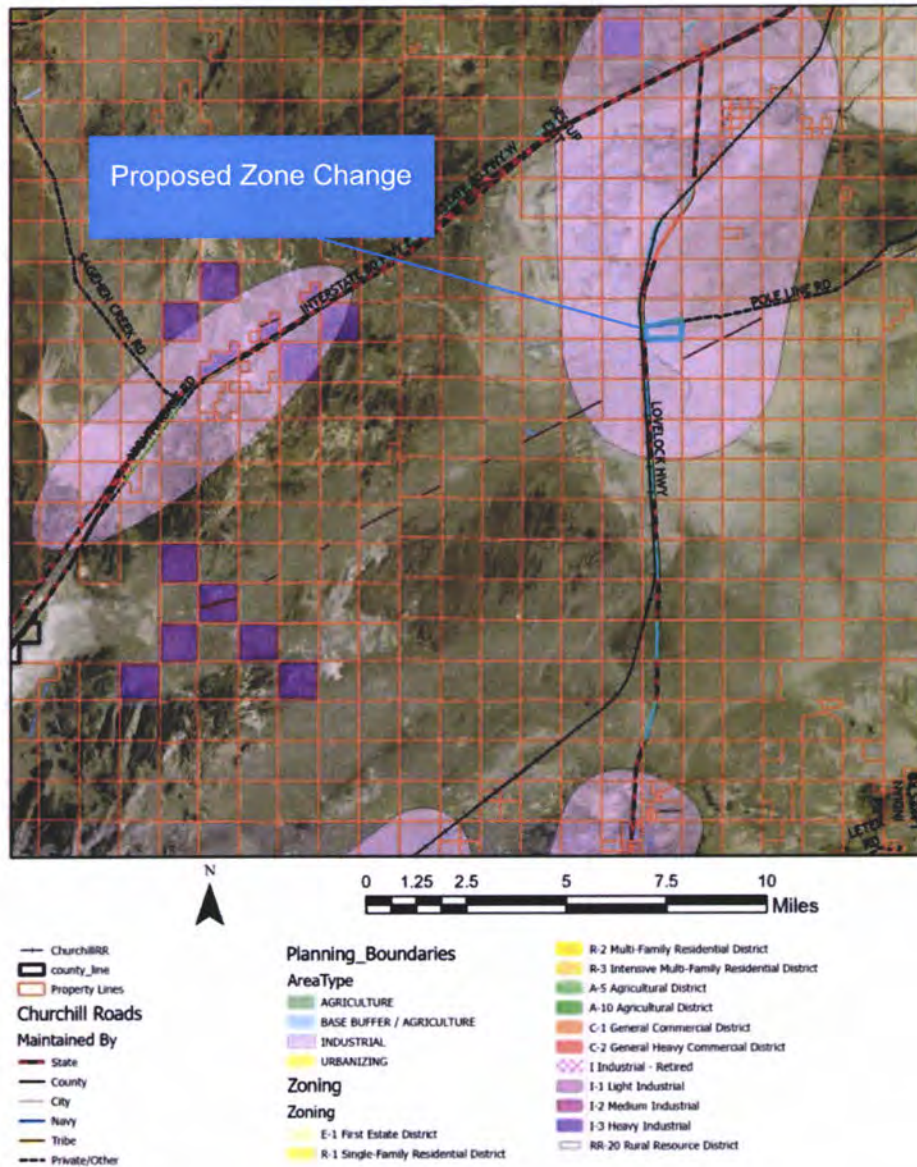


Exhibit 1

Agency Comments

Agency	Reviewer	Comment
NDOW	Cheyenne Trueblood	After review, the Nevada Department of Wildlife has no additional comments or concerns regarding the proposed Zone Change for this project.

Public Comment

Staff received no public comments on this application.

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CHURCHILL COUNTY

Zoning District Change (Rezone) Application

**** You are expending much time and money on your project – PLEASE READ THE INSTRUCTIONS ****

Person Name(s), or Project/Business/Organis. Name: Matthew Usbeck

Zoning District: RR-20 Site Address: Parcel 004-431-44 APN(s): 004-431-44

PROJECT PERMIT TYPE – ZONING DISTRICT, CODE, OR PLAN AMENDMENT

SUB-TYPE IS: (See Instructions) ZONING DISTRICT AMENDMENT

Needed for submitting online.

Existing zoning on property: RR-20 Proposed zoning on property: I-3

Acreage of parcel(s): 218.574 Acreage being changed: 218.574

Acreage of surface water rights on property: _____

Submittal Package Items:

- ☒ This form
- ☒ Fee
- ☒ Deed of ownership for the property
- ☒ Air photo of the neighborhood with applicant name and address at the top, property identified, and roads or prominent features labeled.
- ☒ Zoning map of the neighborhood showing the change with applicant name and address at the top, property identified, and roads or prominent features labeled.
- ☒ Pre-application meeting to determine the correct permit, and to review the procedures and materials needed.

QUESTIONNAIRE

Approving the Rezone request requires the County to determine that the **approval criteria**, below, are met. Answer the questions below relating to the criteria. If you need more space, please attach a separate sheet of paper that restates the question and provides the answer. **DO NOT LEAVE SPACES EMPTY.**

CCC 16.08.060(E) Findings requires that the applicant has the burden of proof to provide facts supporting the proposed amendment. Additionally, the applicant shall provide adequate information in the application and on the site plan to substantiate the findings.

1. A zoning map amendment ... shall provide evidence ... concerning the physical use of land and zoning currently existing in the general vicinity ... in the previous five (5) year time period ...

Describe the property and the land use of all surrounding parcels. Attach pictures, photos etc. as needed

Site - Zoning: RR-20 Uses: Vacant

North - Zoning: RR-20 Nearby uses: Vacant

West - Zoning: RR-20 Nearby uses: Vacant

South - Zoning: RR-20 Nearby uses: Vacant

East - Zoning: RR-20 Nearby uses: Vacant

Describe changes in the last 5 years: N/A - Vacant

a. How growth and/or other development factors in the community support a change in the land use.

Describe in detail the reasons for requesting a zone change. _____

The current zoning does not allow for destructive testing. This request is consistent with the county's goal of locating industrial uses in less populated remote areas, and would ~~allow for destructive testing. This property falls within the Industrial planning area on the Master Land Use Plan.~~

What changes in the area or community support the change, such as growth and/or other development factors? _____

Precedent for this use exists within vicinity of this property and skilled workforce _____

required to operate this facility resides locally. _____

b. The change in land use represents orderly development and that adequate services and infrastructure to support the proposed land use are available in the area.

Describe how the request provides for orderly development. _____

The remote nature of this site will require **minimal, isolated utility demands. Initial utilities for the site to be temporary to begin,** and we intend to bring facilities to the site (**power, water/septic, etc**)

Describe why you think there are adequate services and infrastructure needed to support the requested change. _____

N/A _____

c. The change in zoning provides for an appropriate use of the land.

Describe how the change in zoning provides for an appropriate use of the land. _____

This land use is best served in remote and rural areas, similar to existing precedent for this use _____

Spot zoning is not permitted. Describe how this proposed zone change is consistent with the surrounding zoning districts and land uses and will not enact "spot zoning". _____

All surrounding lots are currently vacant. This is a large area (over 200 acres). The _____

proposed use aligns with the intended master plan use of Industrial. _____

d. The proposed zoning is in substantial conformance with the master plan and other adopted plans and policies.

Master Plan designation: Industrial Why do you think your request is consistent with the land use designation? _____
Proposed zone change aligns with the county's land use goals and policies to establish industrial use _____

within industrial designation on master plan (LU 2.5), along a major highway (LU 2.7), provides industrial _____

employment to the area (LU 5), and infills federal land "checker boarding" with industrial use (LU 5.2) _____

If there are policies from the Master Plan or other plans that you wish to note in support of your request, provide them in a separate document. _____

A major element of the Master Plan is the protection and support of the farming and agriculture.

Are there surface water rights present on the property? If so, what will happen to them? _____

No existing surface water rights on the site. N/A. _____

Will your request result in the conversion of farmland to other uses? If so, what will happen to the farming operation? yes, however this parcel is currently vacant and there is no current farming operation on the site

e. ***The proposed zoning and project is sensitive to and compatible with the use and development of the adjacent properties.***

You must examine the Code's Use Table to view the possible uses allowed in the requested zoning district in the future. Why do you think those uses will be sensitive to and compatible with the neighborhood?

This parcel is located in a remote area with no nearby commercial or residential uses. Surrounding lands are vacant and undeveloped The proposed I-3 zoning is consistent with this land use pattern.

Application Signatures

APPLICANT AFFIDAVIT

Matthew Usbeck

(PRINT NAME), being duly sworn, deposes and states that:

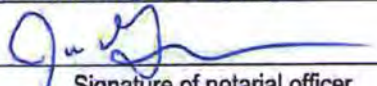
- 1) I/we either own the property described in the foregoing application, or have permission of the property owner which has been provided with the application;
- 2) The statements and answers herein contained, and the information herewith submitted are in all respects complete, true and correct to the best of my/our knowledge and belief;
- 3) That the zoning ordinances for a permit have been read, understood and complied with.
- 4) That no assurance or guarantee can be given by members of Planning Commission or Planning Department.
- 5) That any material misrepresentation or omission made in the application or at a public hearing by the applicant or an agent of the applicant may constitute grounds for reexamination of the permit, if granted.

State of WA)
County of King)


Applicant's Signature

Signed and sworn to (or affirmed) before me on 7/7/2026 (date) by

Matthew Usbeck (name(s) of person(s) making statement),


Signature of notarial officer



OWNER AFFIDAVIT (if not applicant)

New Nevada hands, LLC, by HEATH A. Rushing, Its: Manager
(PRINT NAME), being duly sworn, deposes and states that:

- 1) I/we own the property described in the foregoing application;
- 2) The statements and answers herein contained, and the information herewith submitted are in all respects complete, true and correct to the best of my/our knowledge and belief;
- 3) That the zoning ordinances for a permit have been read, understood and complied with.
- 4) That no assurance or guarantee can be given by members of Planning Commission or Planning Department.

State of California
County of El Dorado

Applicant's Signature [Signature]

Signed and sworn to (or affirmed) before me on July 10, 2024 (date) by

Heath A. Rushing (name(s) of person(s) making statement).
[Signature]

Signature of notarial officer

- see attached CA FORM PUB STAMP.
- TEE

ASSESSORS CONSULTATION

Changing the zoning on a property will probably change the current taxation of the existing lots or change the tax status. Of special importance is changing land that the owner has enrolled in Agricultural Deferred Tax Status or other deferred tax status, in which case changes may result in the requirement to pay back deferred taxes.

County policy requires consultation with the County Assessor so the landowner understands how their taxes will change.

Assessor consultation:

Date	Title	Printed Name	Signature
------	-------	--------------	-----------

EMAIL FROM ASSESSORS OFFICE TO SATISFY CONSULTATION REQUIREMENT:
leslie.notestine@churchillcountynv.gov

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of El Dorado

On 7/10/20 before me, Anahi Rea-Estrada, Notary Public
(insert name and title of the officer)

personally appeared Heath A. Pushing
who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature

Anahi Rea-Estrada

(Seal)



Heapy, Mary

From: Leslie Notestine <leslie.notestine@churchillcountynv.gov>
Sent: Tuesday, July 7, 2026 8:34 AM
To: Heapy, Mary
Cc: Usbeck, Matthew; Dan Cahalane; Denise Mondhink-Felton
Subject: RE: Zone Change App - Rivian Battery Testing

Arcadis Warning: Exercise caution with email messages from external sources such as this message. Always verify the sender and avoid clicking on links or scanning QR codes unless certain of their authenticity.

Good Morning –

This email will fulfill the signature requirement from the Assessor's office. Please be aware that this change of zone will most likely increase the taxable value of the property to an industrial value. If you require more information regarding the value change, please let me know and I will provide a rough estimate.

Thank you.

Respectfully,



Leslie J. Notestine

Chief Deputy Assessor, CNA
Churchill County Assessor's Office
155 N. Taylor Street, Suite 200
Fallon, NV 89406

NEW EMAIL: Leslie.Notestine@churchillcountynv.gov

Direct line: 775-428-0240
Main line: 775-423-6584 ext 1402
Fax: 775-423-2429

From: Heapy, Mary <mary.heapy@arcadis.com>
Sent: Monday, July 06, 2026 12:05 PM
To: Leslie Notestine <leslie.notestine@churchillcountynv.gov>
Cc: Usbeck, Matthew <matthew.usbeck@arcadis.com>
Subject: Zone Change App - Rivian Battery Testing

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Hi Leslie,

Dan Cahalane provided us with your contact information for a Zone Change Application for a remote battery testing facility for Rivian. Please see attached for the application files. Would you be able to provide email approval/signature, as we are not local to Churchill County?

Please let me know if you need any additional information.

Thank you,

Mary Heapy, NCIDQ, RDI

Senior Associate

Arcadis Inc.

1420 5th Avenue, Suite 2400 | Seattle, WA | 98101 | USA

T +1 214-468-7554

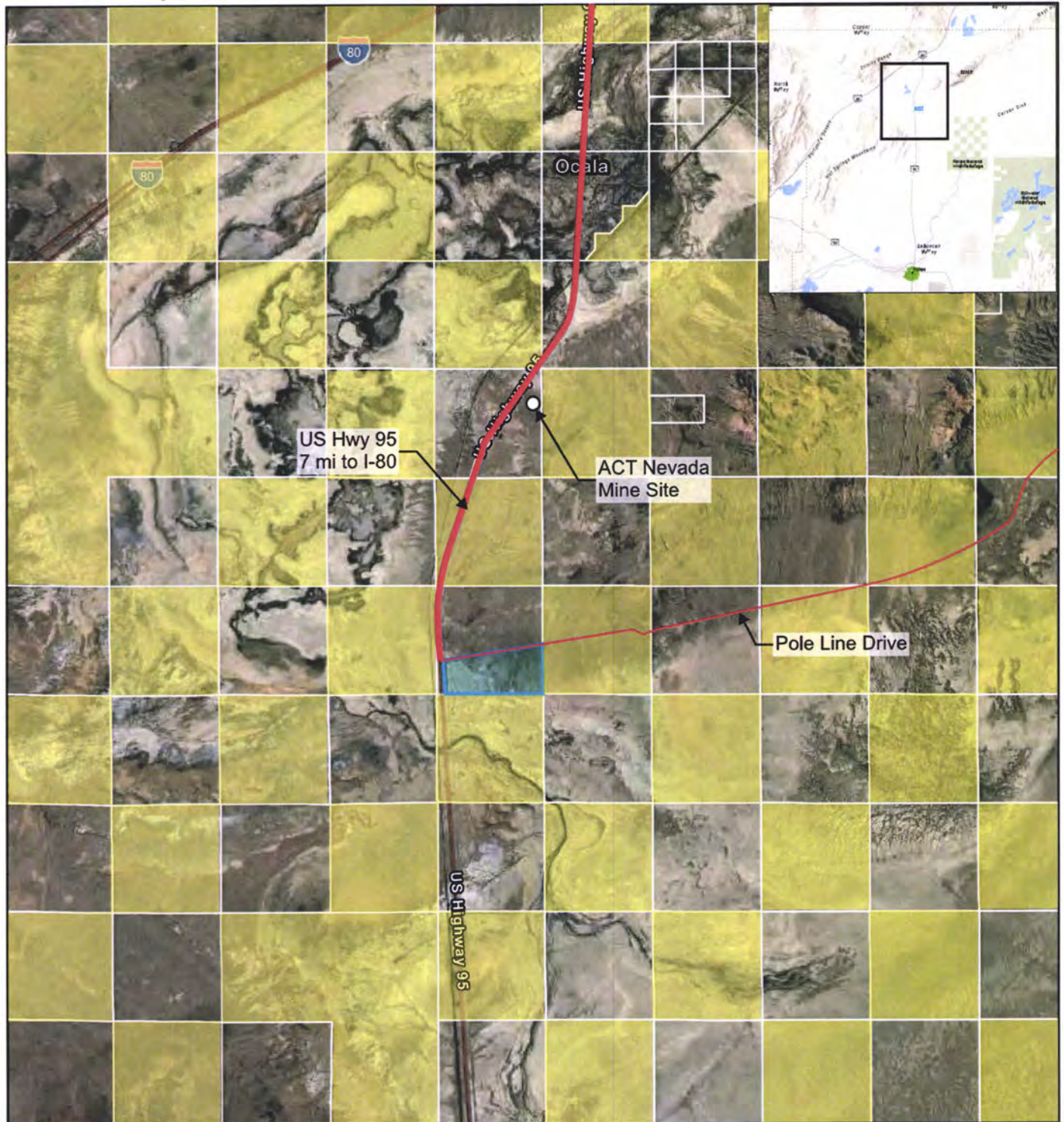
www.arcadis.com



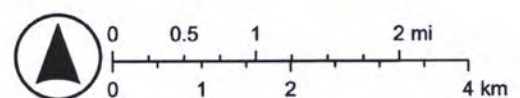
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Aerial Map

Rivian
Parcel 004-431-44



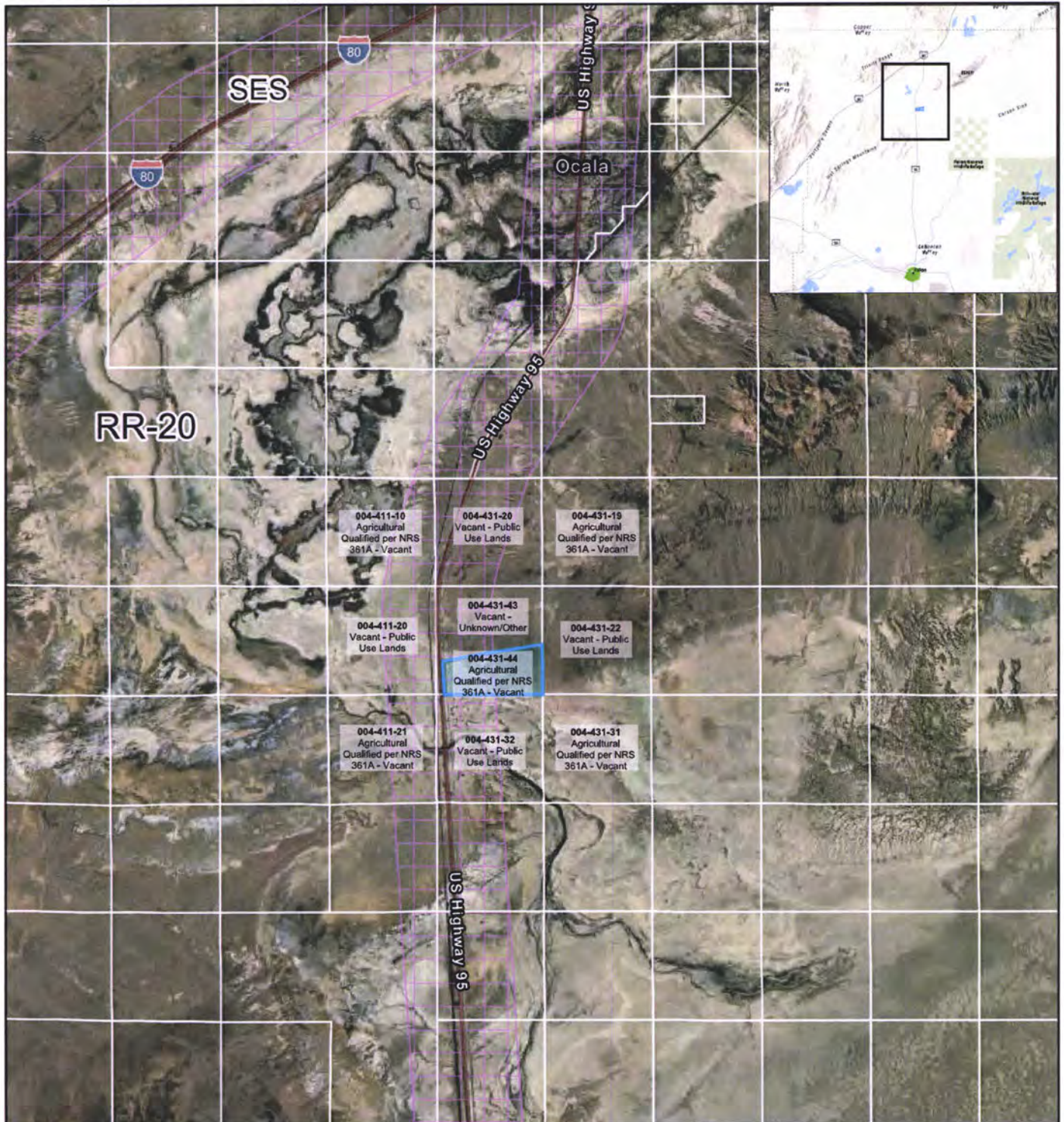
- Bureau of Land Management (BLM)
- Churchill County Tax Parcel Boundaries
- Project Parcel
- Access Road
- Existing Facilities



Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Earthstar Geographics

Vicinity and Zoning Map

Rivian
Parcel 004-431-44

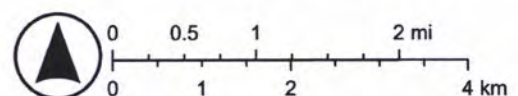


 SES Special Exclusion Setback

 Churchill County Tax Parcel Boundaries

 Project Parcel

Note: Project Parcel and surrounding parcels are zoned Rural Resource District (RR-20)



Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Earthstar Geographics

RE: Churchill County Planning Commission August 12, 2026 hearing agenda item - Rivian Zone Change, APN 004-431-44 (off Lovelock Hwy)

From Cheyenne Trueblood <cheyenne.trueblood@ndow.org>

Date Wed 7/22/2026 9:34 AM

To Planning Admin <planning-admin@churchillcountynv.gov>; Dan Cahalane
<Dan.Cahalane@churchillcountynv.gov>

Caution: This email originated from outside of the Churchill County organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. When in doubt, contact your IT Department.

Good morning,

After review, the Nevada Department of Wildlife has no additional comments or concerns regarding the proposed Zone Change for this project.

Please let me know if you have any questions.

Thank you,



**Cheyenne (Acevedo)
Trueblood**

Western Region Supervising
Habitat Biologist
Habitat Division

Phone: (775) 688-1145

Email:

cheyenne.trueblood@ndow.org

Nevada Department of Wildlife
1100 Valley Road
Reno, Nevada 89512

**Support Nevada's Wildlife...
buy a Hunting & Fishing
license!**

State of Nevada Confidentiality Disclaimer: This message is intended only for the named recipient. If you are not the intended recipient you are notified that disclosing, copying, distributing or taking any action in reliance on the contents of this information is strictly prohibited

From: Planning Admin <planning-admin@churchillcountynv.gov>

Sent: Tuesday, July 21, 2026 11:29 AM

To: Gary Fowkes <gary.fowkes@churchillcountynv.gov>; Brad Dolan <FM@fallonfire.org>; Jera Reidenbach <Jera.Reidenbach@churchillcountynv.gov>; Leslie Notestine <leslie.notestine@churchillcountynv.gov>; dianebaley60@gmail.com; Wilbur, Laurence (NV Energy) <laurence.wilbur@nvenergy.com>; matt.wagner@nvenergy.com; D2 Traffic DL <d2traffic@dot.nv.gov>; Graham, Jason <JGraham@dot.nv.gov>;

Joseph Marynak <jmarynak@lands.nv.gov>; sthompson@dcnr.nv.gov; Cheyenne Trueblood <cheyenne.trueblood@ndow.org>; NDOW Review <ndowreview@ndow.org>; Steve Shell <sshell@water.nv.gov>
Cc: Dan Cahalane <Dan.Cahalane@churchillcountynv.gov>; Carina Nolasco <carina.nolasco@churchillcountynv.gov>; Randy Hines <Randy.Hines@churchillcountynv.gov>
Subject: Fw: Churchill County Planning Commission August 12, 2026 hearing agenda item - Rivian Zone Change, APN 004-431-44 (off Lovelock Hwy)

WARNING - This email originated from outside the State of Nevada. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Sorry, forgot the attachments.

Diane Moyle

Administrative Assistant

planning-admin@churchillcountynv.gov

Public Works, Planning & Building Department

775-423-7627 Main Phone

Churchill County is an equal opportunity employer and provider.

From: Planning Admin <planning-admin@churchillcountynv.gov>

Sent: Tuesday, July 21, 2026 11:25 AM

To: Gary Fowkes <gary.fowkes@churchillcountynv.gov>; Brad Dolan <FM@fallonfire.org>; Jera Reidenbach <Jera.Reidenbach@churchillcountynv.gov>; Leslie Notestine <leslie.notestine@churchillcountynv.gov>; dianeale60@gmail.com <dianeale60@gmail.com>; Wilbur, Laurence (NV Energy) <laurence.wilbur@nvenergy.com>; matt.wagner@nvenergy.com <matt.wagner@nvenergy.com>; D2 Traffic DL <d2traffic@dot.nv.gov>; Graham, Jason <jgraham@dot.nv.gov>; jmarynak@lands.nv.gov <jmarynak@lands.nv.gov>; sthompson@dcnr.nv.gov <sthompson@dcnr.nv.gov>; chey.trueblood@ndow.org <chey.trueblood@ndow.org>; ndowreview@ndow.org <ndowreview@ndow.org>; sshell@water.nv.gov <sshell@water.nv.gov>

Cc: Dan Cahalane <Dan.Cahalane@churchillcountynv.gov>; Carina Nolasco <carina.nolasco@churchillcountynv.gov>; Randy Hines <Randy.Hines@churchillcountynv.gov>

Subject: Churchill County Planning Commission August 12, 2026 hearing agenda item - Rivian Zone Change, APN 004-431-44 (off Lovelock Hwy)

The Churchill County Planning Commission will be considering the attached application for a Zone Change from Rivian at the August 12, 2026 hearing. This zone change request is in preparation for a permit request for a battery testing site to come at a later date. We are requesting any comments, questions, or remarks from your department/agency to be sent to me and Dan Cahalane, Senior Planner, **by July 30, 2026** to be included in the staff report and with the application to the Planning Commission. We appreciate your input for these applications because you may have knowledge or understanding that we do not.

Diane Moyle

Administrative Assistant

planning-admin@churchillcountynv.gov

Public Works, Planning & Building Department

270 S Maine Street, Suite A

Fallon, NV 89406

775-423-7627 Main Phone

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RE: Churchill County Planning Commission August 12, 2026 hearing agenda item - Rivian Zone Change, APN 004-431-44 (off Lovelock Hwy)

From Leslie Notestine <leslie.notestine@churchillcountynv.gov>
Date Tue 7/21/2026 12:41 PM
To Planning Admin <planning-admin@churchillcountynv.gov>
Cc Denise Mondhink-Felton <denise.felton@churchillcountynv.gov>; Dan Cahalane <Dan.Cahalane@churchillcountynv.gov>

Hello -

Please be aware this parcel is currently in agricultural assessment. The zoning change could trigger an ag deferred tax bill for the prior 7 years. We have informed the applicant of this as part of the initial consultation on this application.

Thank you.

Respectfully,



Leslie J. Notestine

Chief Deputy Assessor, CNA
Churchill County Assessor's Office
155 N. Taylor Street, Suite 200
Fallon, NV 89406
NEW EMAIL: Leslie.Notestine@churchillcountynv.gov
Direct line: 775-428-0240
Main line: 775-423-6584 ext 1402
Fax: 775-423-2429

From: Planning Admin <planning-admin@churchillcountynv.gov>
Sent: Tuesday, July 21, 2026 11:29 AM
To: Gary Fowkes <gary.fowkes@churchillcountynv.gov>; Brad Dolan <FM@fallonfire.org>; Jera Reidenbach <Jera.Reidenbach@churchillcountynv.gov>; Leslie Notestine <leslie.notestine@churchillcountynv.gov>; dianebaley60@gmail.com; Wilbur, Laurence (NV Energy) <laurence.wilbur@nvenergy.com>; matt.wagner@nvenergy.com; D2 Traffic DL <d2traffic@dot.nv.gov>; Graham, Jason <jgraham@dot.nv.gov>; jmarynak@lands.nv.gov; sthompson@dcnr.nv.gov; cheyenne.trueblood@ndow.org; ndowreview@ndow.org; sshell@water.nv.gov
Cc: Dan Cahalane <Dan.Cahalane@churchillcountynv.gov>; Carina Nolasco <carina.nolasco@churchillcountynv.gov>; Randy Hines <Randy.Hines@churchillcountynv.gov>
Subject: Fw: Churchill County Planning Commission August 12, 2026 hearing agenda item - Rivian Zone Change, APN 004-431-44 (off Lovelock Hwy)

Sorry, forgot the attachments.

Diane Moyle

Administrative Assistant

planning-admin@churchillcountynv.gov

Public Works, Planning & Building Department

775-423-7627 Main Phone

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From: Planning Admin <planning-admin@churchillcountynv.gov>

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Cc: Dan Cahalane <Dan.Cahalane@churchillcountynv.gov>; Carina Nolasco

<carina.nolasco@churchillcountynv.gov>; Randy Hines <Randy.Hines@churchillcountynv.gov>

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Diane Moyle

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270 S Maine Street, Suite A

Fallon, NV 89406

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Lahontan VALLEY NEWS

AND FALLON EAGLE STANDARD

Proof and Statement of Publication
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Jodi Lynn Dark says:

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Jodi Lynn Dark

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NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that a public hearing will be held in the Churchill County Administrative Complex, 155 North Taylor Street, County Commission Chambers, Fallon, Nevada. The Churchill County Planning Commission will hold a meeting on August 12, 2026 beginning at 6:00 p.m. on the following requests:

Consideration and possible action re: An abandonment of easement application, AE26-4, filed by Casey Road LLC. The property is south of Casey Road, Assessor's Parcel Numbers 008-792-11 and 008-792-25, in the R-1 zoning district. The applicant proposes to abandon the 50' portion of the road easement shown on sheet 3 of 5 of the Final Map of Sand Creek Subdivision. The 50' easement is to be replaced with dedicated roadways on the proposed Sand Creek Subdivision Map #2, Phase 1.

Consideration and possible action re: A zone change application, ZC26-2, filed by Mary Heapy of Arcadis, Inc. for Rivian. The property is located on the Lovelock Highway (Highway 95 North), Assessor's Parcel Number 004-431-44, in the RR-20 zoning district. The applicant proposes to change the zoning from RR-20 to I-3.

If you cannot attend the Planning Commission meeting, written comments may be submitted to the Public Works, Planning & Building Department, 270 S Maine Street, Suite A, Fallon, NV 89406, before 5:00 p.m., August 11, 2026. A copy of the application is on file and available for public inspection at the Churchill County Public Works, Planning & Building Department. We will also post on August 6, 2026 a scanned copy of the application with the Agenda for the August 12, 2026 meeting. The Planning Commission will make a recommendation to the Board of County Commissioners, who will make a final decision on both applications.

Pub Dates: July 30, 2026 Ad # 63620

Exhibit - Official packet excerpt - Original packet

Public Comment – APN 004-431-44 Rezone

From Michelle Anderson <mlanderson89506@gmail.com>

Date Fri 8/7/2026 2:50 PM

To Planning Admin <planning-admin@churchillcountynv.gov>; Joe Sanford <joe.sanford@churchillcountynv.gov>; ClerkBoards <ClerkBoards@churchillcountynv.gov>; Alexa Robinson <alexa.robinson@churchillcountynv.gov>; Myles Getto <myles.getto@churchillcountynv.gov>; Matt Hyde <matt.hyde@churchillcountynv.gov>; Eric Blakey <eric.blakey@churchillcountynv.gov>; lane.mills@churchillcountynv.gov <lane.mills@churchillcountynv.gov>; Dan Cahalane <Dan.Cahalane@churchillcountynv.gov>

Cc Carina Nolasco <carina.nolasco@churchillcountynv.gov>

 1 attachment (369 KB)

Request for Continuation and Additional Findings APN 004-431-44.pdf;

Caution: This email originated from outside of the Churchill County organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. When in doubt, contact your IT Department.

Dear Planning Department and Members of the Planning Commission,

Please accept the attached Public Comment Package regarding the proposed rezone of APN 004-431-44 from RR-20 to I-3.

I respectfully request that this letter and the attached exhibits be included in the official record and provided to each member of the Planning Commission before the public hearing.

Thank you for your time and consideration. I appreciate your service to Churchill County and respectfully request that the Commission carefully consider the information and requests contained in the attached package before making a recommendation.

Respectfully,

Michelle Anderson
Churchill County Resident

PUBLIC COMMENT

Request for Continuance and Additional Findings

Proposed Zoning Amendment - APN 004-431-44 (RR-20 to I-3)

Dear Churchill County Planning Department and Members of the Planning Commission:

I respectfully submit this public comment regarding the proposed rezoning of APN 004-431-44 from RR-20 (Rural Resource) to I-3 (Heavy Industrial). According to the application, the requested zoning amendment is intended to allow destructive battery testing, a use not permitted under the current zoning.

I support responsible economic development and recognize the importance of private property rights. However, those rights must be balanced with the County's responsibility to protect the health, safety, welfare, and quality of life of Churchill County residents.

My concern is not with responsible industrial development. My concern is whether sufficient information has been presented to allow the Planning Commission to make the findings required under Churchill County Code before recommending approval.

The application discusses why the property is suitable for industrial zoning but provides little information regarding the environmental, public health, emergency response, or operational impacts associated with destructive battery testing.

Churchill County Code § 16.08.060(E) places the burden of proof on the applicant to provide facts supporting the proposed amendment and adequate information to substantiate the required findings. Based on the information currently provided in the application, I am concerned that the applicant has not yet met that burden with respect to the environmental, public safety, emergency response, and operational impacts associated with the proposed destructive battery testing facility. I respectfully request that the Planning Commission ensure the applicant has satisfied its burden of proof before making a recommendation to the Board of County Commissioners.

Approving the zoning amendment before these issues have been adequately evaluated effectively determines that this land use is appropriate for this location before the Commission and the public have had the opportunity to fully understand its potential impacts. Once zoning has been changed, later permitting processes may focus on how a project complies with applicable requirements rather than whether the zoning change itself should have been granted.

If the applicant has not yet provided sufficient evidence to support the required findings under Churchill County Code § 16.08.060(E), I respectfully request that the Planning Commission continue the application until the necessary information has been submitted and made available for meaningful public review. If the required burden of proof cannot be met, I respectfully request that the Commission recommend denial of the application.

I further request that the Commission identify in the public record the evidence supporting each required finding under Churchill County Code, including consistency with the Master Plan, adequacy of public services and infrastructure, protection of public health and safety, environmental stewardship, and the appropriateness of the proposed land use.

Attached are Exhibit A - Requested Findings and Questions, Exhibit B - Requested Supporting Documents, and Exhibit C - Procedural Requests.

Please ensure this decision is based on complete information, substantial evidence, and the thoughtful planning our community deserves.

Thank you for your time, your service, and your careful consideration.

Respectfully,

Michelle Anderson
Churchill County Resident

Exhibit A - Requested Findings and Questions

I respectfully request that the Planning Commission identify the evidence supporting each required finding before recommending approval.

Master Plan

- How does destructive battery testing further the goals of the Churchill County Master Plan regarding public health, public safety, environmental stewardship, and orderly development?
- What evidence supports consistency with the Master Plan beyond the property's industrial planning designation?

Nature of the Proposed Use

- What battery chemistries will be tested?
- What activities are included in "destructive testing"?
- Will testing include thermal runaway, fire, explosion, crush, puncture, or overcharge testing?
- What is the maximum battery or battery pack size proposed?

Air Quality

- What emissions are expected during normal operations and destructive testing?
- Will an air quality permit be required?
- Has an air dispersion analysis been completed?

Fire Protection and Emergency Response

- What is the maximum credible fire scenario?
- Has Churchill County Fire Department reviewed the proposal?
- Does the County possess the staffing, equipment, and training necessary to respond?
- Has Churchill County Emergency Management reviewed the proposal?
- Will additional public resources or mutual aid be required?

Environmental Protection

- How will hazardous materials and damaged batteries be stored and managed?
- How will contaminated fire suppression water be contained?
- What measures will protect groundwater?

Infrastructure and Future Uses

- What public infrastructure improvements or additional public costs will be required?
- What additional uses become allowable if the parcel is rezoned to I-3?
- Which of those uses require future public hearings, and which may proceed through administrative review?

Exhibit B - Requested Supporting Documents

If available, I respectfully request that the following documents be included in the public record before the Commission makes a recommendation:

Planning Documents

- Planning Staff Report
- Staff analysis of each required approval finding
- Draft conditions of approval
- Agency review comments

Environmental Documents

- Air quality analysis
- Air dispersion modeling
- Environmental impact analysis or assessment
- Groundwater protection analysis
- Stormwater management plan

Fire and Emergency Response

- Fire hazard analysis
- Thermal runaway hazard analysis
- Fire suppression plan
- Firewater containment plan
- Emergency Response Plan
- Churchill County Fire Department review
- Churchill County Emergency Management review

Hazardous Materials and Regulatory Review

- Hazardous Materials Management Plan
- Hazardous Waste Management Plan
- Spill prevention plan, if applicable
- Nevada Division of Environmental Protection correspondence
- Air permit determinations or applications
- Any required state or federal environmental permits

Infrastructure

- Traffic study, if required
- Noise study, if completed
- Utility demand analysis
- Water demand analysis
- Fiscal impact analysis, including projected costs to County emergency services

Exhibit C - Procedural Requests

I respectfully request that the Planning Commission:

1. Continue the public hearing if the information necessary to evaluate the proposal is not yet available.
2. Ensure the applicant has met its burden of proof under Churchill County Code § 16.08.060(E) before making a recommendation.
3. Identify in the public record the evidence supporting each required approval finding.
4. Make supporting reports and technical documents available to the public with sufficient time for meaningful review before the hearing.
5. Allow sufficient time for public review and comment if material new information is submitted before or during the hearing process.
6. Include this letter and its exhibits in the official record for this application.
7. Forward this submission as part of the record to the Board of County Commissioners if the application proceeds.

Final Request

Before recommending approval, I respectfully request that the Planning Commission ensure the applicant has met the burden of proof established by Churchill County Code § 16.08.060(E) and that the record contains sufficient evidence to support the required findings. If that evidence is not yet available, I respectfully request a continuance so the Commission and the public can meaningfully evaluate it before a permanent zoning change is recommended.

EXHIBIT 2

CHURCHILL COUNTY PLANNING COMMISSION
AUGUST 12, 2026 MEETING TRANSCRIPT
ZC26-2 HEARING AND APPELLANT'S CLOSING PUBLIC
COMMENT

APN 004-431-44 - Rivian / Arcadis, Inc.
Requested Zone Change: RR-20 to I-3 Heavy Industrial

Source: August 12, 2026 Churchill County Planning Commission Meeting Transcript supplied by Appellant and prepared from the public meeting video. Meeting-video timestamps are preserved.

Scope: This exhibit is not the transcript of the entire meeting. It contains two complete, relevant transcript segments: (1) the uninterrupted Agenda Item 8.E / ZC26-2 hearing, from approximately 18:20 through the Commission's motion, vote, and recommendation at approximately 45:23; and (2) Appellant's complete additional public comment near the end of the meeting, from approximately 53:04 through 55:07, in which she addressed future zone-change review, the applicant's stated reason for rezoning, project impacts, compatibility, the Master Plan, and the fact that zoning stays with the land.

No pages are omitted within either included segment. The intervening transcript concerns unrelated agenda business and is not reproduced. Source transcript page numbers and video timestamps are preserved.

Highlighting: Yellow highlighting is a navigation aid only. The surrounding transcript is retained so the highlighted statements can be read in context.

Included source transcript pages: 19-47 and 56-58.

and 95. five and therefore recommend the board of county commissioners approve with conditions the subdivision application.

17:57

17 minutes, 57 seconds

Second.

18:04

18 minutes, 4 seconds

I have a first from Commissioner Mills, a second from Commissioner Goings. All those in favor. All those opposed.

18:13

18 minutes, 13 seconds

It will be forwarded to the board of county commissioners. Thank you for your time this evening.

18:20

18 minutes, 20 seconds

Eight, new business item number D as stated will be postponed to Wednesday, September 9th, 2026, which will move on to item number eight, new business E.

18:30

18 minutes, 30 seconds

Consideration and possible action regarding a zone change application ZC26-2 filed by Mary Heippe of Arcadius, Inc.

18:39

18 minutes, 39 seconds

for Rivian. The property is located on the Lovelock Highway, Highway 95 North.

18:44

18 minutes, 44 seconds

Assessor's parcel number is 004-431-44 in the RR-20 zoning district. The

18:51

18 minutes, 51 seconds

applicant proposes a change of zoning from RR20 to I3.

18:56

18 minutes, 56 seconds

There is somebody here to speak for Rivian. They are joining us via um goto meeting and they are here to answer any questions. I'll turn it over to staff.

19:05

19 minutes, 5 seconds

Dan Colon, Churchill County Planning.

19:07

19 minutes, 7 seconds

For the record, I have zone change 26-2 before you today. The applicant is requesting to change a 218.57

19:16

19 minutes, 16 seconds

acre parcel from rural resource or RR20 to heavy industrial I3. This site is remote. It's 7 miles south of Trinity

19:25

19 minutes, 25 seconds

Junction. Um the applicant intends to establish destructive battery testing.

19:30

19 minutes, 30 seconds

This is because RR20 does not permit that and I3 allows it with a special use permit.

19:38

19 minutes, 38 seconds

staff is able to make all the required findings under the development code. Um since we have an audience, I'm going to go through all the findings in detail.

19:47

19 minutes, 47 seconds

So the first finding is the proposed amendment is in substantial compliance with and supports the goals and policies of the master plan.

19:55

19 minutes, 55 seconds

Staff has found that nine goals and policies are affected by this application and it conforms with the master plan in that regard. Um, this is

20:03

20 minutes, 3 seconds

in a master plan category area of industrial. Um, this is an area that the county has decided is where we want

20:12

20 minutes, 12 seconds

industrial. It's located far away from everything else in the county. Um, the closest use is, I believe, a gravel mine

20:20

20 minutes, 20 seconds

about 2 miles north. Then the next closest is the Navy bombing range and that's about 11 miles away. And then

20:27

20 minutes, 27 seconds

Kent metal is about 13. The closest residential use, and I'm going to state use as in residentially zone property as

20:35

20 minutes, 35 seconds

an A10, is 17 miles south on 95. So, it is quite a long ways away from anything.

20:42

20 minutes, 42 seconds

As you can see on the master plan land use and growth management plan before you, we're up in that yellow area towards the top, smack dab in the middle

20:52

20 minutes, 52 seconds

of that. So this is in full conformance with the master plan as it is currently written. Second finding is the proposed

21:01

21 minutes, 1 second

amendment will provide land uses compatible with the existing adjacent land uses and will not have detrimental impacts to the other properties in the

21:07

21 minutes, 7 seconds

vicinity. There are no uses established in the vicinity adjacent on any of the parcels around there. Like I said, the

21:16

21 minutes, 16 seconds

closest use that has been established is a mine about two miles away. Um, I drove up there about a month ago. I

21:25

21 minutes, 25 seconds

didn't see a house for about 10 minutes away driving up 95.

21:31

21 minutes, 31 seconds

There's not much close by and it's not going to detrimentally impact anything.

21:37

21 minutes, 37 seconds

And then the third finding, the proposed amendment will not negatively impact existing or planned public services or facilities and will not impact public

21:45

21 minutes, 45 seconds

health, safety or welfare. So this is adjacent to and it abuts 95. It also

21:52

21 minutes, 52 seconds

abuts pole line road. So there is both legal and physical access to this site.

21:58

21 minutes, 58 seconds

Otherwise there are no planned facilities in this area. And the zone that is being asked for a change here is

22:07

22 minutes, 7 seconds

I3 heavy industrial. Our code defines that as the purpose of this district is to provide for heavy industrial uses and

22:14

22 minutes, 14 seconds

land uses that have the great potential for impacting adjacent land uses and infrastructure. This type of zoning should be located away from people and

22:22

22 minutes, 22 seconds

other non-industrial uses and uses within it may have to develop their own access to the roadway and/or railway transportation systems.

22:32

22 minutes, 32 seconds

Fundamentally, this type of zoning is intended for places that are remote and do not have access to normal services.

22:39

22 minutes, 39 seconds

Therefore, the remoteness is the point here and it does not impact any public facilities or services. As for the

22:47

22 minutes, 47 seconds

impacts of public health, safety or welfare, public health is and safety are dealt with by the fact that there is still good clear access to the site

22:55

22 minutes, 55 seconds

along US 95. That allows for fire and emergency access if anything happens on this site. So that way it doesn't impact

23:03

23 minutes, 3 seconds

neighbors or at least impacts them within reason. So that way we can take care of any fires or anything that goes on there and evacuate people who are injured on the site. Um, public health.

23:15

23 minutes, 15 seconds

This is, as I stated earlier, very far away from anything. It's 17 miles away from the closest residentially zoned use. Um, generally speaking, the wind blows things towards the bombing range.

23:27

23 minutes, 27 seconds

Um, so there's very little public health concern at this point. Any health concerns are dealt with at the

23:35

23 minutes, 35 seconds

sight specific review in terms of a conditional zoning permit or a special use permit, which goes before this

23:42

23 minutes, 42 seconds

board. um and welfare. Um fundamentally this is an industrial use being proposed

23:49

23 minutes, 49 seconds

in a place where we want industrial and will generate income and revenue for the county. So staff is able to make all three of the required findings and

23:58

23 minutes, 58 seconds

therefore recommends that the commission approve this application. I'm available for any questions though I do want to

24:04

24 minutes, 4 seconds

make one final note here. What we are looking at here is a zone change. What this is dealing with is changing the

24:12

24 minutes, 12 seconds

menu of what uses are permissible within a specific district. The RR20 district

24:20

24 minutes, 20 seconds

is basically painted across the entire county because we have lots of areas where there's nobody um and it's federally owned. It's kind of the broad

24:29

24 minutes, 29 seconds

brush paint strokes. We allow for things like mineral extraction. An I3 zone change as proposed here is going to add potentially 33 new uses.

24:40

24 minutes, 40 seconds

This is the list of all the types of uses. They are generally speaking industrial dealing with warehousing,

24:47

24 minutes, 47 seconds

manufacturing, explosive and combustive materials testing,

24:54

24 minutes, 54 seconds

auction houses, restaurants, towing businesses, all of these things that are out here um on this list.

25:03

25 minutes, 3 seconds

All of these new uses require a conditional zoning permit which is going to allow for staff to provide conditions

25:10

25 minutes, 10 seconds

when we actually see a site plan or a special use permit which again staff will be reviewing the application providing conditions and it goes to the

25:18

25 minutes, 18 seconds

board to make a or the planning commission in order to make a decision.

25:23

25 minutes, 23 seconds

So, I just want to make it clear that this is changing the restaurant that you're going to and what you can pick from the menu as opposed to allowing for

25:32

25 minutes, 32 seconds

a specific use to be established. All of these uses still need entitlement through the special use or conditional zoning process. And now I'm available for any questions if you have any.

25:43

25 minutes, 43 seconds

Thank you. I do have a question for you, but this time I would like to um turn it over to Rivian and the representative

25:51

25 minutes, 51 seconds

that is here to introduce yourself and add anything to this that you would like, please. Thank you so much. I'm happy to be here.

25:58

25 minutes, 58 seconds

Lindsay Young with Rivian Real Estate.

26:00

26 minutes

So, um second everything staff just went through with respect to the rezoning application. um happy to answer any questions, but I also took a drive up to

26:09

26 minutes, 9 seconds

the site and it's a beautiful country, but very very uh vacant and peaceful.

26:14

26 minutes, 14 seconds

I'll put it that way. So, um anyway, just wanted to add that. But thank you all for having us.

26:21

26 minutes, 21 seconds

Thank you. Um I do have a question for staff with all the information that you did put forth. Um, can you show us on a map where is the other I3 in conjunction

26:31

26 minutes, 31 seconds

to this RR20 that you're asking for a zone change on? Where is the closest I3?

26:38

26 minutes, 38 seconds

It's north of Trinity Junction. And Diane, can we pop up the map again?

26:50

26 minutes, 50 seconds

Go back to Diane. Oh, no. You can go to that one, I guess.

27:08

27 minutes, 8 seconds

So there is no other I3 south of I80 at this time.

27:12

27 minutes, 12 seconds

Oh, there's also down here and they're I3. Okay.

27:22

27 minutes, 22 seconds

And and and to add to that, there's a couple other parcels I recall around Kennameal that are industrial as well.

27:29

27 minutes, 29 seconds

About three or four.

27:35

27 minutes, 35 seconds

So I3 with being Ken metal being the closest to town is approximately how many miles to get on record, please?

27:43

27 minutes, 43 seconds

Five. Five miles.

27:44

27 minutes, 44 seconds

Yes. is the first I3 that any of those lists that you stated could actually go in there and open a business. That is correct.

27:52

27 minutes, 52 seconds

Okay.

27:53

27 minutes, 53 seconds

I believe it's about five miles if you're going out on 50 as well.

27:57

27 minutes, 57 seconds

Okay. Wonderful. And I do want to remind the board we're here only for a zone change. Nothing to do with what he all the information you gave was just additional information. Thank you.

28:10

28 minutes, 10 seconds

Tennis Mills for the record. Dan, just to clarify, for example, I see in the data packet that you guys provided for us that the Nevada Department of

28:18

28 minutes, 18 seconds

Wildlife was asked for input and one of the comments they made was they basically said no comment. I assume that's again because this is just a

28:27

28 minutes, 27 seconds

zoning change. If we later have an application for specific use, then we would expect Endow to weigh in if they have any wildlife concern.

28:36

28 minutes, 36 seconds

Exactly correct. Okay. Thank you.

28:41

28 minutes, 41 seconds

Um, Madam Chair, Jeff going for the record. One more question.

28:46

28 minutes, 46 seconds

Seems to me even with these new I3, I2, I1 um, designations, we have a setback as well from from the 95 corridor. Correct.

28:57

28 minutes, 57 seconds

We have a setback for particularly noxious uses. So these include, I believe, um, brothel,

29:05

29 minutes, 5 seconds

explosive battery and destructive testing, explosive manufacturing, and I believe junkyards and

29:14

29 minutes, 14 seconds

um, landfills. So they have a half mile setback from the road.

29:23

29 minutes, 23 seconds

And to help the public understand more, with the RR20, what is allowed in the RR20?

29:32

29 minutes, 32 seconds

I'm going to just be upfront with you.

29:34

29 minutes, 34 seconds

There's a lot of things that are allowed in the RR20. Um, I don't know all of them offhand. Generally speaking, we're dealing with things like grazing,

29:43

29 minutes, 43 seconds

mineral extraction, geothermal, potentially solar, um, renewable

29:50

29 minutes, 50 seconds

generation for specifically solar. I'm making this distinction because we split out solar specifically in our code. Um,

29:58

29 minutes, 58 seconds

and generally speaking, things like houses and other things, very rural type uses that allow us to have extractive

30:06

30 minutes, 6 seconds

industries where they make sense. Madam Chair, if I can add some some more comment on the RR20. As you can see

30:14

30 minutes, 14 seconds

here, the green all around town again, that's the A5, A10. Those are the A zones. Um, of course, we have the city

30:21

30 minutes, 21 seconds

of Fallon, which is there. Um, and then we've got commercial C1C2 and some industrial going down 50. Um, and then a little bit of a north of town, right?

30:33

30 minutes, 33 seconds

And and and like it was stated earlier, the RR20 is almost kind of a catch-all zone for everything else, right? Because again, a lot of it is vacant land. There

30:41

30 minutes, 41 seconds

are some things out there, but and R20 has some uses. Um, and these and these folks here that are requesting this zone

30:49

30 minutes, 49 seconds

change, the use that they want to do, which they put in their application, is not allowed in the R20.

30:54

30 minutes, 54 seconds

Hence why they're asking for um the the zone changes to get it so they can do their use in the area that they're in.

31:04

31 minutes, 4 seconds

Anything else from the board? Joe, Madam Chair, Joe Frey for the record.

31:08

31 minutes, 8 seconds

Um, reading out of the county's master plan, Rural Resource District, RR20.

31:13

31 minutes, 13 seconds

The purpose of this district is to protect and enhance every natural resource including historical and archaeological sites by limiting,

31:21

31 minutes, 21 seconds

controlling, and prohibiting specific uses of land. So I hope that clarifies that is the purpose of zone RR20.

31:33

31 minutes, 33 seconds

So I believe you know uh for my fellow members to consider is that what we need

31:40

31 minutes, 40 seconds

to do out there or is this more suited for indust an industrial setting or are we trying to protect and preserve something out there that's

31:48

31 minutes, 48 seconds

archaeological historical natural etc.

31:56

31 minutes, 56 seconds

I mean we can add again there's also in the master plan there's those industrial areas that are designated in there as well and this is this is within that

32:04

32 minutes, 4 seconds

industrial area that that that has been designated in the in the RR20 area.

32:10

32 minutes, 10 seconds

Madam Chair, Jeff, going for the record, I I'd like to just also state here that um planning department has done a remarkable job of going

32:19

32 minutes, 19 seconds

through and um we we had many workshops um that were open to the public. We had

32:27

32 minutes, 27 seconds

this has gone through this board at least twice as well as through the county commissioners. Um, and this is

32:36

32 minutes, 36 seconds

exactly what the community has been begging for as we sit here and listen to

32:43

32 minutes, 43 seconds

the applicants that come to us with questionable industrial applications.

32:52

32 minutes, 52 seconds

This is what the community's been asking for. Push it north. Get it out of town.

32:57

32 minutes, 57 seconds

Get it out of town. So that is what this I3 was set up for was to move these types

33:06

33 minutes, 6 seconds

of industries north and away from the the residential away from the

33:13

33 minutes, 13 seconds

agricultural out where nobody had to mess with them and they were along a um you know a pretty useless piece of ground and I don't want to call it

33:22

33 minutes, 22 seconds

useless but really there's no grazing much happening out there. There's no mining going on much of anything. So anyway, I I when I look at this, this is

33:30

33 minutes, 30 seconds

exactly what the what the the residents of this community have been asking for and we're moving quite a ways away from

33:39

33 minutes, 39 seconds

town here. So, um if for that type of application that would come down later on.

33:47

33 minutes, 47 seconds

I have another question for staff. Do you do you foresee the intent of the I3 is going to be on both sides of the

33:54

33 minutes, 54 seconds

corridor? It's not only going to be north, it's also streaming south as well. There's already I3 down there, but all of that land that is not being used

34:03

34 minutes, 3 seconds

um and is federally owned. Do you foresee a majority of these zone changes coming in for I3 in this area?

34:12

34 minutes, 12 seconds

I guess we can't see the future, but again, if it's out of that area that that we that the master plan doesn't

34:20

34 minutes, 20 seconds

designate as potential industrial, then we would probably recommend that as a denial because again, that's not where we want the industrial. We've done the

34:27

34 minutes, 27 seconds

work to say we want the industrial parcels to be north of town along 80, north of Hazen. That's where we want industrial. Um, and that's, as you can

34:35

34 minutes, 35 seconds

see, the yellow areas, that's where we have industrial. There's a little section of land um I guess a little closer to town that's industrial uh

34:44

34 minutes, 44 seconds

potentially industrial but um again if it's not in a designated area as designated in the master plan then we

34:51

34 minutes, 51 seconds

would probably recommend that for denial because it doesn't follow the master plan.

34:57

34 minutes, 57 seconds

Thank you. Is there anything else from the board?

35:02

35 minutes, 2 seconds

Seeing that there is none, can I open it up to the public? I'd like to remind the public that it is limited to three minutes per person speaking. Is there anyone that like to state a public comment?

35:16

35 minutes, 16 seconds

I know you've been up once before, but we'll need your name and address for the record, please.

35:24

35 minutes, 24 seconds

Michelle Anderson, 3355 Beverly Drive.

35:28

35 minutes, 28 seconds

Um, I submitted documents previous asking questions. One of the questions that wasn't answered where maybe we can get an answer from Rivian is what type

35:37

35 minutes, 37 seconds

of destructive battery testing are they wanting to do out in this I3 zone change.

35:46

35 minutes, 46 seconds

I don't know that anything has been um submitted at this time, but we'll turn that over to staff to answer. Please

35:56

35 minutes, 56 seconds

I'm sorry. I don't want to take away [clears throat] your three minutes.

35:57

35 minutes, 57 seconds

We'll start the clock for your three minutes and ask all your questions and then we can have staff directed after that. I'm sorry. Go ahead and start the clock, please.

36:09

36 minutes, 9 seconds

I would like to remind the planning commission that the reason for the change on this zoning change application

36:17

36 minutes, 17 seconds

is destructive battery testing and with Rivian that's usually lithium. Okay. So,

36:26

36 minutes, 26 seconds

I've already submitted written comments which I would like the board to address before making a recommendation.

36:32

36 minutes, 32 seconds

Um, and so I won't repeat myself tonight, but I do want to ask you to consider something when this application come is

36:40

36 minutes, 40 seconds

before you. Please don't look at this simply as another request to change a piece of property from RR20 to I3

36:48

36 minutes, 48 seconds

industrial. Churchill County is seeing multiple industrial and high energy projects proposed. At some point, we

36:56

36 minutes, 56 seconds

have to stop looking at each project in isolation and looked at look at it in cumulative impact

37:03

37 minutes, 3 seconds

and how that will be on our power, infrastructure, water, emergency services, environmental, neighborhood

37:09

37 minutes, 9 seconds

properties, etc. The board has already stated previously, the commissioner's board, that we don't have enough

37:16

37 minutes, 16 seconds

emergency services. We already have a battery storage facility out here, a data center which has been changed to I3

37:24

37 minutes, 24 seconds

for data center planning um among Tesla testing already. So I'm also concerned

37:31

37 minutes, 31 seconds

about what battery testing actually means. Will this facility conduct destructive or abuse testing? What

37:39

37 minutes, 39 seconds

happens if a test results in thermal runaway or a fire that exceeds the containment? We've seen the the

37:46

37 minutes, 46 seconds

communities including Monterey deal with the consequences of major lithium ion battery fires. So while those facilities

37:54

37 minutes, 54 seconds

are not identical to what is proposed here, they could be. And that demonstrates why the risks deserve serious consideration. Before changing

38:03

38 minutes, 3 seconds

rural residential land to heavy industrial, we should know what types of quant and quantities of batteries will be on site, what testing will occur,

38:12

38 minutes, 12 seconds

what fire suppression and environmental containment should and will be provided, and whether our local emergency services

38:20

38 minutes, 20 seconds

have the staffing, training, equipment, and resources to handle a worst case scenario. And there is another important issue.

38:28

38 minutes, 28 seconds

This zoning decision outlives Rivian.

38:31

38 minutes, 31 seconds

Once RR20 becomes I3, we need to consider everything that heavy industrial zoning could allow there in

38:38

38 minutes, 38 seconds

the future, not just the applicants standing before us today. I'm not against the growth. I am asking for

38:45

38 minutes, 45 seconds

responsible, sustainable growth. and please require the appropriate studies evaluate the evaluate this against our

38:53

38 minutes, 53 seconds

master plan providing meaningful public notice and make sure that these questions are answered before recommending a permanent zoning change.

39:02

39 minutes, 2 seconds

Thank you. Thank you for your comment.

39:09

39 minutes, 9 seconds

Is there any other public comment at this time?

39:17

39 minutes, 17 seconds

Seeing that there is none, staff, would you like to address any questions?

39:27

39 minutes, 27 seconds

How about to the board? Does the board have anything to state or add?

39:37

39 minutes, 37 seconds

Dennis Mills, for the record, um, Miss Anderson, I really appreciate your comments. I I will say I'm a little bit confused because it kind of sounds like

39:45

39 minutes, 45 seconds

your uh Rivian's coming to us for a first or second date and you're asking what their intentions are once we get married. There's a there's additional

39:54

39 minutes, 54 seconds

rounds of of approval for for anybody that wants to

40:02

40 minutes, 2 seconds

establish a new business in in this county.

40:06

40 minutes, 6 seconds

So all the things you're asking are things that I've only been on this board for a matter of months. So I I can't speak as someone with the background

40:15

40 minutes, 15 seconds

that Jeff does, for example, but but I've seen other other requests come through just in the last seven months

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40 minutes, 23 seconds

that all of those questions are addressed in in the relative industrial challenge that that those

40:30

40 minutes, 30 seconds

other companies have asked for. So, I just want anyone that's listening to to to be aware this isn't something we're

40:37

40 minutes, 37 seconds

ignoring. We're not rubber stamping. On the other hand, uh this company physically owns this land. This land under the master plan with very careful

40:46

40 minutes, 46 seconds

development over the last 20 years, the county wants this area to be the location for I3. So, um,

40:55

40 minutes, 55 seconds

to my mind, we kind be kind of bonkers to say, well, you can't change this R20 to I3 because of what might happen to

41:03

41 minutes, 3 seconds

it. The the purpose is if someone thinks they have a reason to shift I3, that's what we want them to do. So just as a comment to everyone that I I don't don't

41:12

41 minutes, 12 seconds

want anyone to think that that we're doing this stuff lightly but but from a perspective from my perspective I don't see the I don't see the reason to be asking these questions now.

41:24

41 minutes, 24 seconds

If I may just as a an aside we don't necessarily have a discussion about public comment that may be more appropriate for the board discussion.

41:36

41 minutes, 36 seconds

Thank you. Did you want to add anything, Steph?

41:48

41 minutes, 48 seconds

Yeah. Um, again, I just want to reemphasize that the current you the current zoning of this is an RR20. Um,

41:55

41 minutes, 55 seconds

we we don't have they did put a proposed use in the application as as battery testing. Um

42:04

42 minutes, 4 seconds

unfortunately, you know, at the time of a zone change, we don't require all the same um reports and applications and

42:13

42 minutes, 13 seconds

and everything that goes along with the use of the of the the proposed use. Um so it's it's we just can't we can't analyze that right now because again

42:22

42 minutes, 22 seconds

that takes time and money for them to prepare that. And this again this isn't the time for the use, it's the time for the zone change to be able to do the

42:30

42 minutes, 30 seconds

use, right? And it's not just this battery testing, it's unindustrial use that that that that can be done out

42:37

42 minutes, 37 seconds

there um with the zone change. Just to add to that, we frequently have zone

42:45

42 minutes, 45 seconds

changes, the economy changes, a project doesn't get developed even though they got went through a zone change. The use

42:53

42 minutes, 53 seconds

the menu that of uses that are available within that zone change is what we're considering. And what we're considering is effectively this is got reasonable

43:01

43 minutes, 1 second

infrastructure given the zoning that we're looking for out here. It meets the intent of the master plan and it's not

43:09

43 minutes, 9 seconds

going to be impacting neighboring properties. Those are the three things that we're looking at at the zone change phase because those are what we can

43:17

43 minutes, 17 seconds

actually evaluate. When we start looking at the specific site circumstances, we're going to be looking at everything that affects neighboring public health,

43:26

43 minutes, 26 seconds

safety, welfare, all the things that go into the special use permit findings.

43:31

43 minutes, 31 seconds

Likewise, when somebody comes in for a division of land, what we're looking at there is what are the infrastructure requirements? How is that going to

43:39

43 minutes, 39 seconds

impact public health, safety, welfare, and how does that tie back to the master plan? So every step of making sure the public is protected is addressed through a different type of application phase.

43:49

43 minutes, 49 seconds

So just want to make that clear.

43:52

43 minutes, 52 seconds

Thank you. And I want to also thank staff for doing so much diligent work when there is an application that does come forward. I know a lot of applications do come forward and they

44:00

44 minutes

never go anywhere because of your strict restrictions that you do put on them. So thank you for that. Seeing that there was no more um public comment, is there anything else from the board?

44:13

44 minutes, 13 seconds

No. Once you do your public comment under an item, you get one time to pe speak per item and per public comment.

44:20

44 minutes, 20 seconds

Um, did you have something else? Nope.

44:24

44 minutes, 24 seconds

Wonderful. I would like to entertain a motion, please.

44:27

44 minutes, 27 seconds

Madam Chairman, Jeff Goings for the record. Based on the information provided in the application, the staff report and heard tonight, I move to find

44:34

44 minutes, 34 seconds

that the criteria found in CCC 16.08.060E 060E have been met for zone change

44:41

44 minutes, 41 seconds

applications ZC26-2 to change the zoning of 218.57

44:49

44 minutes, 49 seconds

acre parcel from RR20 to I3 as assessor's parcel number 004-431-44

44:58

44 minutes, 58 seconds

and therefore recommend that the board of county commissioners approve the zone change application.

45:04

45 minutes, 4 seconds

Second.

45:13

45 minutes, 13 seconds

We have a first with Commissioner Goings, a second with Commissioner Ansodigi. All those in favor? I.

45:19

45 minutes, 19 seconds

All those opposed.

45:23

45 minutes, 23 seconds

The variance will pass five or six to zero. Item number nine. Nine is consent agenda. All matters listed on the

45:31

45 minutes, 31 seconds

consent agenda are considered routine and may be acted upon by the board of county commissioners with one action and without any extensive hearing. Any member of the board or any citizen may

45:40

Um, we would like to welcome her and we'll continue to go through training.

52:57

52 minutes, 57 seconds

We'll be at all these meetings. And is there any other commissioner reports or updates that you guys would like to add?

53:04

53 minutes, 4 seconds

Seeing that there is none, is there any public comment?

53:15

53 minutes, 15 seconds

Michelle Anderson, 3355 Beverly Drive.

53:19

53 minutes, 19 seconds

Good evening again. I have one suggestion I'd like to I'd like the planning commission to consider regarding future zone change applications.

53:28

53 minutes, 28 seconds

When an applicant requests a zoning change, the application requires them to state the reason for that requested

53:35

53 minutes, 35 seconds

change. I believe that reason should become a meaningful part of the commission's consideration when deciding whether to recommend resoning.

53:46

53 minutes, 46 seconds

A zone change shouldn't be considered only as is I3 allowed here or does this parcel qualify for the zoning? If an

53:56

53 minutes, 56 seconds

applicant is asking to change the zoning specifically to accommodate a particular project or use, I believe the commission should also consider the impacts of that

54:04

54 minutes, 4 seconds

proposed use when determining whether the zoning change is appropriate.

54:10

54 minutes, 10 seconds

I understand that zoning stays with the land and that a future owner may use the property differently. In fact, I think

54:18

54 minutes, 18 seconds

that's another reason these decisions deserve careful consideration.

54:23

54 minutes, 23 seconds

But if the county requires applicants to explain why they want a zoning change, that information should have a purpose in the decision-making process.

54:33

54 minutes, 33 seconds

My suggestion is that the planning commission and county consider formally incorporating the applicant's stated reason for the zone change that

54:41

54 minutes, 41 seconds

foreseeable impacts of that proposed use and its compatibility with surrounding properties and the master plan into the

54:48

54 minutes, 48 seconds

review of future zoning changes. I think that would lead to better land use decisions and give the public greater

54:56

54 minutes, 56 seconds

confidence that we're considering not just what a property can be zoned for, but why were changing it in the first place. Thank you.

55:07

55 minutes, 7 seconds

Thank you for your time and your comments this evening. Is there any other public comment?

55:13

55 minutes, 13 seconds

Seeing that there is none, this meeting is adjourned.

Sync to video time

EXHIBIT 3

CHURCHILL COUNTY GOVERNING ZONING-AMENDMENT AND ADMINISTRATIVE-APPEAL STANDARDS

ZC26-2 - APN 004-431-44

Purpose and scope. This exhibit collects the complete official Churchill County application/instruction documents that reproduce or implement the County standards specifically quoted or relied upon in the appeal concerning ZC26-2. It is intended to provide the full relevant County context for the standards cited in Sections III-V and Grounds I-VI.

Part A - Zoning map amendment / rezone standards. Complete current County Zoning District Change (Rezone) Application and Instructions. This part includes the applicant's burden of proof and adequate-information requirement; the CCC 16.08.060(E)(1) criteria concerning development factors, orderly development, adequate services and infrastructure, appropriate land use, Master Plan conformity, and sensitivity/compatibility of the proposed zoning and project; and the County's direction to examine the Use Table and future uses allowed by the requested zoning district.

Part B - Planning Commission findings under CCC 16.08.060(E)(2). Complete current County Code Text Amendment Application. The form expressly states the findings applicable when the Commission forwards a recommendation for approval of a zoning map amendment or consolidated development code amendment: Master Plan compliance; compatibility and detrimental impacts; and impacts to public services/facilities and public health, safety and welfare. The form also asks about utility, emergency/community-service, and transportation demand.

Part C - Administrative appeal standards. Complete current County Appeal Application - Commission Decision. This part reproduces CCC 16.08.050.4(F)4(a)-(g), including filing, appeal content, hearing, notice, evidence, substantial-evidence review, and the Board's authority to affirm, modify, or reverse.

Important source distinction. These are official Churchill County forms and instructions that reproduce and implement the cited County Code standards. The exhibit does not represent that every explanatory sentence in the forms is itself codified ordinance text.

Highlighting. Yellow highlighting is a navigation aid only. The complete source documents are included so each highlighted provision can be read in its original County context.

CHURCHILL COUNTY

Zoning District Change (Rezone) Application

**** You are expending much time and money on your project – PLEASE READ THE INSTRUCTIONS ****

Person Name(s), or Project/Business/Organis. Name: _____

Zoning District: _____ Site Address: _____ APN(s): _____

PROJECT PERMIT TYPE – ZONING DISTRICT, CODE, OR PLAN AMENDMENT

SUB-TYPE IS: (See Instructions) ZONING DISTRICT AMENDMENT

Needed for submitting online.

Existing zoning on property: _____ Proposed zoning on property: _____

Acreage of parcel(s): _____ Acreage being changed: _____

Acreage of surface water rights on property: _____

Submittal Package Items:

- ☐ This form
- ☐ Fee
- ☐ Deed of ownership for the property
- ☐ Air photo of the neighborhood with applicant name and address at the top, property identified, and roads or prominent features labeled.
- ☐ Zoning map of the neighborhood showing the change with applicant name and address at the top, property identified, and roads or prominent features labeled.
- ☐ Pre-application meeting to determine the correct permit, and to review the procedures and materials needed.

QUESTIONNAIRE

Approving the Rezone request requires the County to determine that the **approval criteria**, below, are met. Answer the questions below relating to the criteria. If you need more space, please attach a separate sheet of paper that restates the question and provides the answer. **DO NOT LEAVE SPACES EMPTY.**

CCC 16.08.060(E) Findings requires that the applicant has the burden of proof to provide facts supporting the proposed amendment. Additionally, the applicant shall provide adequate information in the application and on the site plan to substantiate the findings.

1. **A zoning map amendment ... shall provide evidence ... concerning the physical use of land and zoning currently existing in the general vicinity ... in the previous five (5) year time period ...**

Describe the property and the land use of all surrounding parcels. Attach pictures, photos etc. as needed

Site - Zoning: _____ Uses: _____

North - Zoning: _____ Nearby uses: _____

West - Zoning: _____ Nearby uses: _____

South - Zoning: _____ Nearby uses: _____

East - Zoning: _____ Nearby uses: _____

Describe changes in the last 5 years: _____

- a. **How growth and/or other development factors in the community support a change in the land use.**

Describe in detail the reasons for requesting a zone change. _____

What changes in the area or community support the change, such as growth and/or other development factors?

- b. **The change in land use represents orderly development and that adequate services and infrastructure to support the proposed land use are available in the area.**

Describe how the request provides for orderly development. _____

Describe why you think there are adequate services and infrastructure needed to support the requested change.

- c. **The change in zoning provides for an appropriate use of the land.**

Describe how the change in zoning provides for an appropriate use of the land. _____

Spot zoning is not permitted. Describe how this proposed zone change is consistent with the surrounding zoning districts and land uses and will not enact "spot zoning".

- d. **The proposed zoning is in substantial conformance with the master plan and other adopted plans and policies.**

Master Plan designation: _____ Why do you think your request is consistent with the land use designation?

If there are policies from the Master Plan or other plans that you wish to note in support of your request, provide them in a separate document.

A major element of the Master Plan is the protection and support of the farming and agriculture.

Are there surface water rights present on the property? If so, what will happen to them?

Will your request result in the conversion of farmland to other uses? If so, what will happen to the farming operation?

- e. ***The proposed zoning and project is sensitive to and compatible with the use and development of the adjacent properties.***

You must examine the Code's Use Table to view the possible uses allowed in the requested zoning district in the future. Why do you think those uses will be sensitive to and compatible with the neighborhood?

Application Signatures

APPLICANT AFFIDAVIT

_____, (PRINT NAME), being duly sworn, deposes and states that:

- 1) I/we either own the property described in the foregoing application, or have permission of the property owner which has been provided with the application;
- 2) The statements and answers herein contained, and the information herewith submitted are in all respects complete, true and correct to the best of my/our knowledge and belief;
- 3) That the zoning ordinances for a permit have been read, understood and complied with.
- 4) That no assurance or guarantee can be given by members of Planning Commission or Planning Department.
- 5) That any material misrepresentation or omission made in the application or at a public hearing by the applicant or an agent of the applicant may constitute grounds for reexamination of the permit, if granted.

State of _____)
County of _____)

Applicant's Signature

Signed and sworn to (or affirmed) before me on _____ (date) by

_____ (name(s) of person(s) making statement).

Signature of notarial officer

OWNER AFFIDAVIT (if not applicant)

_____, (PRINT NAME), being duly sworn, deposes and states that:

- 1) I/we own the property described in the foregoing application;
- 2) The statements and answers herein contained, and the information herewith submitted are in all respects complete, true and correct to the best of my/our knowledge and belief;
- 3) That the zoning ordinances for a permit have been read, understood and complied with.
- 4) That no assurance or guarantee can be given by members of Planning Commission or Planning Department.

State of _____)
County of _____)

Applicant's Signature

Signed and sworn to (or affirmed) before me on _____ (date) by

(name(s) of person(s) making statement).

Signature of notarial officer

ASSESSORS CONSULTATION

Changing the zoning on a property will probably change the current taxation of the existing lots or change the tax status. Of special importance is changing land that the owner has enrolled in Agricultural Deferred Tax Status or other deferred tax status, in which case changes may result in the requirement to pay back deferred taxes.

County policy requires consultation with the County Assessor so the landowner understands how their taxes will change.

Assessor consultation: _____

Date

Title

Printed Name

Signature

Churchill County Public Works & Planning

Zoning District Change Instructions

INTRODUCTION

This application package is for projects requesting a **Zoning District Amendment** - also called a Rezone or Zone Change. It is authorized under CCC 16.08.060 to make a change to the County Code – specifically the Zoning Map. It is a request to change the land use designation of a parcel of land to a different designation. **Once implemented, any development allowed in the new zone can be proposed as listed in the Land Use Table found in CCC 16.08.250).**

APPLICANT NAME

The NAME entry is for the Applicant. This is the party proposing the change. It is NOT the representative or consultant. It MIGHT BE the landowner, but can be someone else such as a prospective purchaser.

ZONING DISTRICT AND PROPERTY INFORMATION

Enter the existing and proposed Zoning District(s) on the form. For requests with many addresses and parcel numbers, refer to an attachment or other location for the information.

SUBMITTAL PACKAGE AND REVIEW PROCEDURE

The application process starts with **2 pre-application meetings**: One to go over the basics of the form and the process, the other to go over the application materials for accuracy to identify any final changes before submittal. You may want to include pictures, plans, drawings, etc. to make your case.

A required item is an air photo picture showing the neighborhood and land uses of surrounding properties. You can get this from the County website showing the neighborhood of the site. Staff can assist if needed.

Also required is a picture showing the requested change in zoning. Use the zoning map obtained from the County website for the surrounding area, showing the colored zoning districts. It must be marked and labeled to show the proposed zoning change.

>> You can be view both maps on the County website (<https://nv-churchillcounty.civicplus.com/719/Web-Maps>). Copy and print a screen shot. On each map, note the applicant and address, as well as roads and other prominent features.

Staff review and notification procedures:

1. Within 7 days of the filing of the application the Department will provide written notification of application completeness and the date of the public hearings for both the Planning Commission and the Board of County Commissioners.
2. County staff will review the application and prepare a staff report for the Planning Commission.
3. At least 10 days prior to the public hearing, staff will notify all property owners within 300 feet of the subject property (at least 30 unique property owners will be notified) of the proposed application.
4. At least (3) working days before the public hearing, the agenda is posted and reminder notices are sent to the applicant. **The applicant or a representative must appear before the Planning Commission to present the application.**
5. After the Planning Commission public hearing, the application will be scheduled to go before the Board of County Commissioners with a recommendation from the Planning Commission.
6. **The Board of County Commissioners may approve or deny the application.** Approval might include requirements to complete before the zone change becomes effective.

QUESTIONS AND RELATED CRITERIA

To approve a zone change, there needs to be a good reason that meets the requirements in County Code. **There are "Findings" or approval criteria that must be met to approve a change.** The remainder of the form is composed of those criteria, and questions related to each of them. Instructions and explanation generally accompany the questions, so no additional instruction is provided here.

CHURCHILL COUNTY

Code Text Amendment Application

**** You are expending much time and money on your project – PLEASE READ THE INSTRUCTIONS ****

Person Name(s), or Project/Business/Organis. Name: _____

PROJECT PERMIT TYPE – ZONING DISTRICT, CODE, OR PLAN AMENDMENT

SUB-TYPE IS: CODE TEXT AMENDMENT

Needed for submitting online.

Submittal Package Items:

☐

This form

☐

Fee

☐

Text of code section with changes (please use strikeout & underline format, such as with "Track Changes")

☐

Text document explaining why you think the change is needed.

☐

Any documentation needed to support your request

QUESTIONNAIRE

Approving the Rezone request requires the County to determine that the **approval criteria**, below, are met. Answer the questions below relating to the criteria. If you need more space, please attach a separate sheet of paper that restates the question and provides the answer.

CCC 16.08.060(E) Findings requires that the applicant has the burden of proof to provide facts supporting the proposed amendment. Additionally, the applicant shall provide adequate information in the application and on the site plan to substantiate the findings.

2. **The commission, in forwarding a recommendation to the board for approval of a zoning map amendment or consolidated development code amendment shall make the following findings of fact:**

a. **That the proposed amendment is in substantial compliance with and supports the goals and policies of the master plan;**

Identify the goals and policies from the Master Plan that you think support your request, provide them in a **separate document**. Why do you think your request is in substantial compliance with the Master Plan?

Major elements of the Master Plan include the protection and support of **agriculture**, and the protection and support of the **NAS Fallon naval base**. How could your proposed change affect them?

- b. ***That the proposed amendment will provide for land uses compatible with existing adjacent land uses and will not have detrimental impacts to other properties in the vicinity;***

☐ **N/A** – Check this box if your proposed change does not affect any locations of land.

You must examine the Code's Use Table and other code elements to view the possible uses that will be affected by your proposal. Why do you think the change will be sensitive to and compatible with those neighborhoods that are affected?

- c. ***That the proposed amendment will not negatively impact existing or planned public services or facilities and will not adversely impact the public health, safety and welfare.***

Will your proposed change increase the demand on existing or planned utility facilities? Explain why.

Will your proposed change increase the demand on existing or planned emergency or community services? Explain why. (For example, police, fire, hospital, legal services, social services, library, museum, etc.)

Will your proposed change increase the demand on existing or planned road or transportation facilities? Explain why.

APPLICANT AFFIDAVIT

(PRINT), being duly sworn, deposes and states that:

- 1) The statements and answers herein contained, and the information herewith submitted are in all respects complete, true and correct to the best of my/our knowledge and belief;
- 2) That the zoning ordinances for a permit have been read, understood and complied with.
- 3) That no assurance or guarantee can be given by members of Planning Commission or Planning Department.
- 4) That any material misrepresentation or omission made in the application or at a public hearing by the applicant or an agent of the applicant may constitute grounds for reexamination of the permit if granted.

Applicant's Signature

State of _____)
County of _____)

Signed and sworn to (or affirmed) before me on _____ (date) by

_____ (name(s) of person(s) making statement).

Signature of notarial officer

Churchill County Public Works & Planning

Code Text Amendment Instructions

INTRODUCTION

This application package is for projects requesting a **Code Text Amendment** - also called a Code Change. It is authorized under CCC 16.08.060 to make a change to the County laws governing land use development. Sometimes this relates to areas of land, or zoning districts placed on land, or uses that are allowed within zoning districts. Most of these relationships are found in the Land Use Table (CCC 16.08.250). Sometimes changes are about general standards that must be followed, and do not affect specific locations.

The NAME entry is for the Applicant. This is the party proposing the change. It is NOT the representative or consultant.

The **Permit Type and Subtype** are needed to submit the application online.

SUBMITTAL PACKAGE AND REVIEW PROCEDURE

The process starts with **2 pre-application meetings**: One to go over the basics and the process, the other to go over the application materials to identify any final changes before submittal. You may want to attach pictures, plans, drawings, etc. to make your case.

A required item is a text document of the sections that would be changed. It needs to show the changes proposed. This normally is done by showing "strikeouts" of the text being deleted, and "underlining" on the text being added. Text replacement would include both. A Word document that shows the changes using the Track Changes function is very effective at showing changes.

Some changes may also need to show the zoning districts or areas the proposed change would affect. Use the zoning map obtained from the County website which shows the colored zoning districts. It must be marked and labeled as needed to illustrate the proposed change, such as including prominent features.

Staff review and notification procedures:

1. Within 7 days of the filing of the application the Department will provide written notification of application completeness and the date of the public hearings for both the Planning Commission and the Board of County Commissioners.
2. County staff will review the application and prepare a staff report for the Planning Commission.
3. When specific properties are affected - At least 10 days prior to the public hearing, staff will notify all property owners within 300 feet of the subject property (at least 30 unique property owners will be notified) of the proposed application.
4. At least (3) working days before the public hearing, the agenda is posted and reminder notices are sent to the applicant. The applicant or a representative must appear before the Planning Commission to present the application.
5. After the Planning Commission public hearing, the application will be scheduled to go before the Board of County Commissioners with a recommendation from the Planning Commission.
6. The Board of County Commissioners may approve or deny the application. Approval might include requirements to complete before the code change becomes effective.

QUESTIONS AND RELATED CRITERIA

To approve a code change, there needs to be a good reason that meets the requirements in County Code. There are "Findings" or approval criteria that must be met to approve a change. The remainder of the form is composed of those criteria, and questions related to each of them. Instructions and explanation generally accompany the questions, so no additional instruction is provided here.

Churchill County Planning Department

Appeals of Commission Decisions (Filing Fee Required)

A decision of the planning commission may be appealed by the applicant or any aggrieved party to the commission following the procedures in this section within ten days of the date of the decision. The board may affirm, modify or reverse the decision.

Procedures for Filing an Appeal

16.08.050.4(F)4(a)

Time Limit For Filing

Any decision of the staff or planning commission may be appealed by the applicant, a protestant or by the district attorney's office if it is in the opinion of said party that any application was improperly granted.

An appeal of the planning commission must be submitted in writing to the board of county commissioners within ten (10) days after the planning commission has rendered its decision. If no appeal is received by the board of county commissioners within the time allowed, such decision may not be appealed.

16.08.050.4(F)4(b)

Appeal Application

All appeals shall be filed in writing accompanied with a filing fee, by filing a signed written notice of appeal and application stating therein the reasons why the decision of the planning commission should be amended, modified or reversed.

The appeal application shall specify the project or decision for which the appeal is being requested. The application shall indicate which aspects of the decision are being appealed. The appeal application shall provide the necessary facts or other information that support the appellant's contention that the commission erred in its consideration or findings supporting its decision.

16.08.050.4(F)4(c)

The clerk of the board shall set the appeal for hearing before the board of county commissioners within sixty (60) days of said appeal being received.

16.08.050.4(F)4(d)

Withdrawal Of Appeal

Upon delivery of a signed written statement the appellant may withdraw its appeal at any time prior to the date of the appeal hearing.

16.08.050.4(F)4(e)

Notices Of Appeals Hearings

- 1) Notice of hearings for appeals from decisions of the commission shall be given by the clerk of the board by mailing of a notice of hearing ten (10) days before the date set for hearing to the petitioner and to all parties involved, as shown by the record of findings and decision furnished by the planning commission to the board.
- 2) Notice of appeals hearings shall be given by one publication in a newspaper of general circulation at least ten (10) days before the date set for the hearing.

16.08.050.4(F)4(f)

Evidence

- 1) To ensure that all parties have access to their elected officials, the board of county commissioners shall not be limited to the record of the planning commission.
- 2) The board of county commissioners shall consider only the issues raised before the planning commission, however, all relevant evidence pertaining thereto which is necessary to render a decision based on substantial evidence shall also be considered.

16.08.050.4(F)4(g)

Decision

The board may affirm, modify or reverse the decision of the commission by a simple majority vote.

Date received: _____

Date of hearing: _____

Filing fee paid: _____

Churchill County Appeal Application

*On a decision by the **Churchill County Planning Commission***

Appeal of Planning Commission Decision

Churchill County Consolidated Code 16.08.050.4(F)4(a) Time Limit for Filing: Any decision of the planning commission may be appealed by the applicant, a protestant or by the district attorney's office if it is in the opinion of said party that any application was improperly granted. An appeal of the planning commission decision must be submitted in writing to the board of county commissioners within ten (10) days after the planning commission has rendered its decision. If no appeal is received by the board of county commissioners within the time allowed, such decision may not be appealed.

Churchill County Consolidated Code 16.08.050.4(F)4(b) Appeal Application: All appeals shall be filed in writing accompanied with a filing fee, by filing a signed written notice of appeal and application stating therein the reasons why the decision of the planning commission should be amended, modified or reversed.

The appeal application shall specify the project or decision for which the appeal is being requested. The application shall indicate which aspects of the decision are being appealed. The appeal application shall provide the necessary facts or other information that support the appellant's contention that the commission erred in its consideration or findings supporting its decision.

Applicant's Name: _____

Applicant's Address: _____

Decision Being Appealed: _____

Date Decision Was Made: _____

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Date _____

EXHIBIT 4

CHURCHILL COUNTY 2020 MASTER PLAN

APPLICABLE PROVISIONS AND POLICY CROSS-REFERENCE MATRIX

ZC26-2 - APN 004-431-44

Official source. Churchill County 2020 Master Plan, adopted April 21, 2021 by the Churchill County Board of County Commissioners.

Scope. This exhibit contains the original Master Plan pages specifically quoted or materially relied upon in the appeal, together with the Master Land Use Plan map and limited surrounding provisions necessary to place those citations in context. It does not reproduce the entire Master Plan.

Included subjects. The Master Plan's role in County decision-making and whole-plan framework; Conservation and Natural Resources; Hazards and Hazard Mitigation; ED 9, ED 9.1 and ED 9.2; the Public Services and Facilities framework; PSF 1, PSF 1.8 and PSF 1.11-1.14; the Master Land Use Plan map; and LU 1, LU 3, LU 5, LU 5.1 and LU 6.2.

Source-page context. Some included Master Plan pages contain additional adjacent policies not specifically cited in the appeal. Those provisions are retained as part of the original page context but are not specially highlighted or treated as independent appeal grounds.

Highlighting. Yellow highlighting is a navigation aid only. Original Master Plan pages are preserved so each highlighted provision can be read in context.

Policy matrix. The final pages contain an Appellant-prepared cross-reference matrix. It is an advocacy/navigation aid, not a Churchill County document, and does not replace the official Master Plan text reproduced first.

CHURCHILL COUNTY 2020 MASTER PLAN

CHURCHILL COUNTY COMMISSIONERS

Pete Olsen – Chairperson
Gregory Koenig – Vice Chairperson
Justin Heath – Commissioner

PLANNING COMMISSION MEMBERS

Deanna Diehl – Chairperson
Charlotte Louis – Vice Chairperson
Charlie Arciniega – Member
Myles Getto – Member
Scott Nelson – Member
Shane Yates – Member
Zack Bunyard – Member

COUNTY MANAGER

Jim Barbee

PUBLIC WORKS, PLANNING & ZONING DEPARTMENT

Chris Spross – Director
Dean Patterson – Associate Planner
Preston Denney – GIS Coordinator
Diane Moyle – Administrative Assistant

Photos Courtesy of Marie Nygren, MCI Joseph R. Vincent – NAS Fallon, Cirq Energy, Bombard Renewable Energy-Enel Green Power, and Churchill County Public Works, Planning & Zoning Department

Adopted on April 21, 2021 by the Churchill County Board of County Commissioners

Note: The Chapter 12 Policy Plan for Public Lands has been carried over from the 2010 Master Plan. Updates will be considered following completion of the Bureau of Land Management (BLM) Carson District Resource Management Plan (RMP).

Any comments, questions, and suggestions are always welcome. Please submit them to the Churchill County Public Works, Planning & Zoning Department:

- at 155 N Taylor Street, Suite 194, Fallon, NV 89406,
- by telephone (775) 423-7627,
- or by email Director Chris Spross,
cspross@churchillcountynv.gov.

Thank you for your interest in our community!

WHAT IS A MASTER PLAN?

The Master Plan is designed to establish Churchill County's vision for the future. It provides the framework and foundation for the decision making of the Board of County Commissioners, the Planning Commission, and the community on matters relating to growth and development through 2040.

The Master Plan focuses on land use and development issues facing Churchill County and establishes goals and policies that address county-wide issues and concerns. It is a dynamic document that must be updated periodically as needs and conditions change. The Churchill County Planning Department is responsible for maintaining the Master Plan and coordinating implementation and review; however, every citizen in the County is responsible for the Plan and its implementation. Any action of a local government and private developer relating to the subdivision or development of land, capital improvements, and similar activities must conform to the Master Plan.

WHY PLAN?

A community must actively manage its growth and respond to changing circumstances if it is to meet the needs of its residents and retain an enjoyable quality of life. Therefore, on a regular basis, and at least every two years, the Planning Commission and Board of County Commissioners will review the Master Plan to determine if progress is being made toward the County's outlined goals. Review of the Master Plan must include discussion and input from other County entities, state and federal agencies, and the public; as well as a review of other County plans to ensure goals are aligned and changing circumstances are addressed. This periodic review will also help to set budget priorities and aid in the implementation of the Capital Improvement Plan.

HOW SHOULD THE PLAN BE USED?

In accordance with Nevada Revised Statutes, the Master Plan may address, but is not limited to, the following subject matter: community design, conservation, economics, housing, land use, population, public buildings, public services and facilities, recreation, seismic safety, streets and highways, transit, utility corridor, and transportation.

The 2020 Churchill County Master Plan includes the following elements:

- ◇ **Chapter 1: Population and Housing** – Past, current, and projected population and housing characteristics.
- ◇ **Chapter 2: Education** – Student demographics and projections of existing educational facilities.
- ◇ **Chapter 3: Conservation and Natural Resources** – Information, goals and policies necessary for the protection and utilization of land, water, air, and other resources.
- ◇ **Chapter 4: Hazards and Hazard Mitigation** – Information on the hazardous conditions existing in the County, and the responsibility and plans for mitigation.
- ◇ **Chapter 5: Historical Preservation** – History of the County, information on historical resources, and plans for preservation.

- ◇ **Chapter 6: Economic Development** – Trends in employment, industry characteristics, and resources contributing to the economy.
- ◇ **Chapter 7: Recreation** – Information on County and City parks, park facility standards, and other recreational facilities and opportunities that County residents use.
- ◇ **Chapter 8: Transportation** – Information, goals, and policies describing the County's vision for the variety of transportation facilities needed for forecasted growth.
- ◇ **Chapter 9: Public Services and Facilities** – Information, goals, and policies describing the County's vision for public sewer and water facilities, and for the variety of public services.
- ◇ **Chapter 10: Open Space** – Information, goals, and policies to preserve the open spaces, protect our natural resources, and maintain our rural character.
- ◇ **Chapter 11: Land Use** – Information, goals, and policies establishing a planned pattern of development to promote sound land use decisions.
- ◇ **Chapter 12: Policy Plan for Public Lands** – Policies for the use of public land under federal control. The plan was adopted into the 2010 Master Plan by the Board of County Commissioners on December 21, 2011. Adoption of a new plan is expected after completion of the Bureau of Land Management's Resource Management Plan (BLM/RMP) for our area.

Goals and Policies

- *GOAL CNR 6: Ensure that measures are taken by Churchill County to maintain good air quality and minimize soil erosion.*
 - Policy CNR 6.1 – Encourage revegetation projects in areas of minimal ground cover to minimize soil erosion.
 - Policy CNR 6.2 – Continue to implement dust control ordinance and require dust control permits when applicable.
 - Policy CNR 6.3 – Consider impacts of new projects on air quality with regard to construction activity, open space, common areas, and roads.
 - Policy CNR 6.4 – Encourage landowners who transfer water rights off their property to vegetate the site with native vegetation, not including vegetation designated as weeds by the University of Nevada Cooperative Extension and USDA, prior to the transfer of the water rights.
 - Policy CNR 6.5 – Take appropriate steps to ensure that new businesses comply with State of Nevada and Environmental Protection Agency standards and require monitoring plans when deemed necessary.

MOSQUITO, VECTOR, AND NOXIOUS WEED CONTROL

Invasive plant and animal infestations reduce the biological, agricultural, recreational, and economic value of land; reduce native plant and animal populations; and degrade ecosystems. There is a Churchill County Mosquito, Vector and Noxious Weed Abatement District that has programs to enforce state and local laws regarding these issues.

Goals and Policies

- *GOAL CNR 7: Churchill County shall ensure that its citizens are protected from nuisances, vectors, and related diseases.*
 - Policy CNR 7.1 – Enforce NRS 555.150 in cooperation with the Mosquito, Vector, and Noxious Weed Abatement District and Fallon/Churchill Fire Department requiring landowners and users to control noxious weeds.
 - Policy CNR 7.2 – Cooperate with other private groups and public agencies to control weed populations by sponsoring education programs to inform the public regarding the safe application of herbicides and other methods of weed control.
 - Policy CNR 7.3 – Support the Mosquito, Vector, and Noxious Weed Abatement District's program of monitoring encephalitis by periodically testing flocks of chickens in partnership with the Nevada State Health Laboratory.
 - Policy CNR 7.4 – Support monitoring programs conducted by the Mosquito, Vector, and Noxious Weed Abatement District to inform the public on how to prevent disease transmission by mosquito populations and reduce nuisance levels.

Numerous hazardous conditions, both natural and manmade, may occur in Churchill County. These include:

- NATURAL HAZARDS
 - Earthquake (seismic activity)
 - Flooding
 - Volcanic Activity
 - Wildland Fire
 - Wind Events
 - Severe Weather
 - Drought
 - Epidemics
- MANMADE HAZARDS
 - Hazardous Materials Release
 - Pipeline Ruptures
 - Utility Failures
 - Dam Inundation Areas
 - Terrorism
 - Arson
 - Old mine entrances – shafts and adits

HAZARDS MITIGATED BY CONSTRUCTION STANDARDS

Construction standards established in the building codes and other development standards adopted by Churchill County provide some protection against seismic activity, wind and severe weather events, and flood damage.

FLOOD HAZARDS

Flooding includes traditional ideas of river and lake flooding, but also includes flash floods (common in the County's mountain gullies, alluvial fans, and valley washes), and breaches of canals elevated above the surrounding lands (common in the Newlands Project area).

Churchill County participates in the National Flood Insurance Program (NFIP). There are two basic components to the program: (a) insurance for homeowners, which is often required by home lenders; and (b) regulations implemented by participating local governments. The regulations are intended to ensure that all development within special flood hazard areas is designed to minimize loss of life and damage to property. Flood zone information can be obtained on the County's website, or through the Planning or Building Department for specific parcels.

The program uses Flood Insurance Rate Maps (FIRMs) developed by the Federal Emergency Management Agency (FEMA) to delineate special hazard areas and risk premium zones. These maps mainly identify the 100-year Floodplains and the associated Floodways, but other areas can be included as well. Maps 4-1 and 4-2 (Fallon area) depict the flood hazard maps for Churchill County. FIRMs are used to determine if properties and buildings are located in flood insurance risk areas, to administer floodplain management programs, and to mitigate flood damage. When it comes to administering the NFIP locally, Churchill County suffers from the problems of having FIRMs that are very outdated. These maps are based on crude and inaccurate topographic information, as well as outmoded methods of reservoir and irrigation management. Churchill County has a project underway to update the County's flood hazard maps, though it may take years to complete.

INDUSTRIAL DEVELOPMENT

While Churchill County averages more industrial jobs than the State, as shown in Table 6-2 (manufacturing, transportation, and warehousing), the County has been working for a long time to attract more industrial development to make manufacturing one of the pillars of the County's economy. Many areas of the County have already been designated for industrial activity in both the Master Plan and Zoning Map, mainly along the state highways and interstate freeways, but little industrial development has been attracted. More recently, the County has been working with developers to establish large industrial centers in the western area of the County. Recent efforts have highlighted the potential of designating industrial lands along the railroad line between Hazen and Trinity, particularly where there are existing railroad sidings. The Transportation Chapter provides additional details about highway and railroad infrastructure. The Land Use Chapter includes additional proposed changes regarding industrial land uses.

Goals and Policies for Industrial Development

- **GOAL ED 9: Establish industrial uses as a fourth pillar of the economy.**
 - **Policy ED 9.1:** The County will continue to coordinate with landowners, developers, and industrial businesses to identify suitable industrial areas along major highways and railways.
 - **Policy ED 9.2:** The County will continue to work toward providing additional industrial and manufacturing employment opportunities, and attracting a greater variety of industries into the area.

As growth continues, the demand for public services and facilities will increase. The intent of this section is to provide a guide for an orderly and planned extension of the public services and facilities needed for the present and future residents of Churchill County.

This section provides information on water services, sanitary sewer services, other utilities, schools, fire, and police protection. Other public facilities, such as recreation and transportation, are presented in separate sections of the Master Plan. Existing and proposed land uses, existing services and facilities, and service standards are used to determine the needs of future services and facilities in Churchill County.

The goals and policies for public services and facilities are presented within this section. These goals and policies along with those contained in other parts of the Churchill County Master Plan serve as a guideline for providing public services and facilities that are necessary for growth as anticipated in the Land Use Plan. The Churchill County Master Plan also seeks to reinforce specific goals for the needs of current and future public facilities and services.

WATER AND SEWER FACILITIES

Churchill County currently operates both a water system and wastewater system to provide service to customers in the unincorporated areas west and north of the City of Fallon.

Thoughts of providing County-supplied services began with the Sand Creek and Pine Grove Subdivisions, which operated multiple small private water and sewer systems. There was concern regarding the quantity of domestic water provided from groundwater wells in the Lahontan Valley, including the basalt aquifer. There was also local and State concern with groundwater pollution caused by the broad use of 1-acre developments using septic systems. Changing that common development pattern was essential in serving future growth in unincorporated Churchill County. And changing that development pattern required the ability to provide community water and sewer services in areas outside the City of Fallon.

The County's initial plans centered around the systems in the Sand Creek and Pine Grove subdivisions. In the early 2000s, proposals for an increasing number of large developments and pressure from those developers spurred action by the County. The County took over and consolidated the multiple small systems, upgraded facilities and worked on expansion of the systems to serve the large developments. The systems were partly funded through outside monies, and partly funded through contributions by the developers. By around 2005 the systems were ready for operation, though ongoing changes were being made, including a sewage system at the golf course that was quickly replaced by the current sewer plant on Moody Lane. The only major development that was connected before the recession of 2008 is the Onda Verde subdivision. The other major developments have not proceeded, which has created complications for the County systems. Over time, improvements were made to serve the additional customers and mobile home parks near the County facilities, including taking over the Country Club Estates water system near the golf course.

The County effort to provide community systems seeks to:

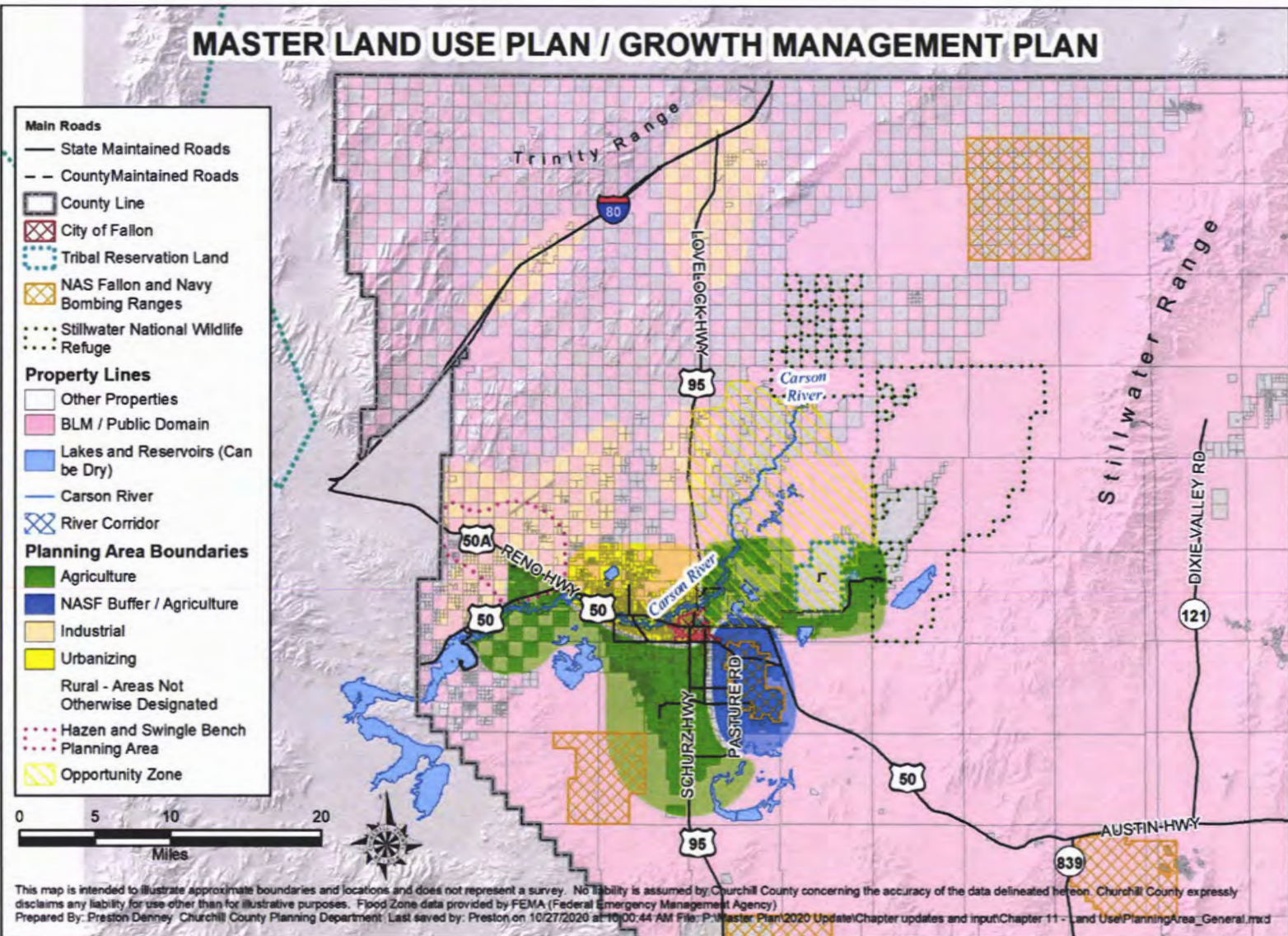
1. consolidate a number of private water systems into a larger municipal water system;
2. expand the municipal water and sewer systems to the larger Urbanizing Area over time;
3. curtail the development of individual domestic wells and septic systems by having new developments connect to the community systems;
4. encourage existing developments to retire their individual systems and connect to the community systems;
5. facilitate economic development, particularly for commercial and industrial development; and
6. create infrastructure to support future development.

Goals and Policies for Water and Sewer Facilities

- **GOAL PSF 1: To protect and preserve water rights and water supply in Churchill County.**
 - Policy PSF 1.1: Implement the recommendations of the Churchill County Water Resources Plan.
 - Policy PSF 1.1.1: Churchill County shall monitor water supply and water quality that satisfies all water resource goals, objectives, and policies contained in the Master Plan and that attains and maintains federal, state, and local water quality standards.
 - Policy PSF 1.2: Coordinate all water supply management facilities in Churchill County.
 - Policy PSF 1.2.1: Churchill County shall have planning, design, and construction, plus operation and maintenance responsibilities for all new water supply facilities in unincorporated Churchill County (See Map 9-1).
 - Policy PSF 1.2.2: New service areas (including expansions) for public water utilities are only allowed in the Urbanizing and Industrial land use designations and may not overlap with other water utility service areas.
 - Policy PSF 1.2.3: Development that is served by a centralized/community water utility must be located within the service area for the utility.
 - Policy PSF 1.3: Consolidate water management and supply in Churchill County to reduce the duplication of services and facilities, and provide consistent noncompetitive water management.
 - Policy PSF 1.4: Prohibit the creation of new private water and wastewater utility companies in Churchill County.
 - Policy PSF 1.5: Ensure that existing private water and sewer companies with insufficient equity to remain viable do not become certificated utilities under the jurisdiction of the Public Utilities Commission of Nevada.
 - Policy PSF1.5.1: Churchill County will review all water and sewer utility applications for Certificates of Public Convenience within Churchill County and make recommendations to the Public Utilities Commission of Nevada.
 - Policy PSF 1.6: New facilities or water rights required by a private water utility shall be financed, built, and owned by the utility or shall be provided by developers and retained in public ownership by dedication to Churchill County. Churchill County will then lease the facilities to the private utility company at a cost of the normal maintenance of the facilities.
 - Policy PSF 1.7: During the creation of a parcel located in a service area created or recognized by the Public Utilities Commission of Nevada, Churchill County will determine the type and amount of water-right dedication. These water rights will then be allocated to Churchill County and leased to the water purveyor when service is extended to the parcel.
 - **Policy PSF 1.8: During the creation of a parcel located in a service area created or recognized by the Public Utilities Commission of Nevada, water service to the new parcel must be capable of meeting all drinking water standards and providing adequate flow and pressure to the parcel in case of fire.** Facilities shall meet County standards to serve new parcels.
 - Policy PSF 1.9: Ensure that water systems and facilities meet all applicable state and local requirements, and make adequate provision for matters including, but not limited to, the minimum size of the system, inspection, fee collection, and maintenance. The standards and procedures for the creation of water systems and facilities are subject to review and approval by the Board of County Commissioners.
 - Policy PSF 1.10: Require the uniform mandatory installation and use of water meters in Churchill County when connecting to the County water system or those assisted by the County system. Water meters are essential for water conservation, equity in billing for water use, and effective management of water resources.
 - Policy PSF 1.10.1: Water meters will be required to the extent allowed by law on all new residential, commercial, and industrial construction.

- Policy PSF 1.10.2: Allow the use of water meters to monitor and enforce water conservation.
- Policy PSF 1.11: Discourage long-term groundwater withdrawals when they exceed available aquifer recharge.
 - Policy PSF 1.11.1: Churchill County shall work with state agencies to manage local groundwater resources in providing for annual use of these resources that does not exceed levels sustainable at current rates of inflow and recharge.
- Policy PSF 1.12: Churchill County will continue to examine and evaluate potential water supply alternatives, including the Carson Water Subconservancy District's (CWSD) Regional Water Plan, that are capable of meeting future demands consistent with the County's Water Resource Plan as updated periodically.
- Policy PSF 1.13: Plan the water supply for Churchill County based upon meeting the average water demand in normal to dry years with additional water conservation measures or other actions in periods of severe drought.
- Policy PSF 1.14: Ensure that a safe and dependable water supply is provided.
 - Policy PSF 1.14.1: Areas planned for urban or suburban development (residential densities greater than one unit per five acres or comparable non-residential development) will be served by a community water supply system. In accordance with adopted and existing County policies and ordinances, all new systems and facilities shall be dedicated to Churchill County.
 - Policy PSF 1.14.2: In cooperation with other departments and agencies, Churchill County shall develop water service plans to coordinate the expansion of existing and new water systems. Where appropriate, the plans shall include groundwater recharge and the identification of recharge areas to be reserved from development.
 - Policy PSF 1.14.3: Stored water without a replenishing source shall not be used for purposes other than fire protection. The use of stored water for fire protection is allowed only with the approval of the appropriate fire protection agency.
 - Policy PSF 1.14.4: Water supply planning and development must not adversely impact adjacent water users or other uses of water.
 - Policy PSF 1.14.5: The cost of water service to new development shall be paid by the new development, and the cost of the service shall include extending service lines or facilities to the site.
 - Policy PSF 1.14.6: Churchill County will work with the State Engineer to develop water budgets for each hydrographic groundwater basin that has the potential to support future growth and development.
 - Policy PSF 1.14.7: Churchill County will work toward preparing an estimate of total water demands in the Lahontan Valley (Basin 101) based upon current zoning, water-right commitments, existing parcels, and future parcel creation.
- Policy PSF 1.15: Acquire and manage existing irrigation water rights as a method to increase the total municipal water supply by maintaining recharge and providing a supplemental source of water for municipal and industrial use.
- Policy PSF 1.16: Require dedication of water rights to the County as outlined in the Churchill County Code. A plan approved by the County for the transfer, change in point of diversion, or change in use shall be outlined in sufficient detail to clearly state intended use.
- Policy PSF 1.17: Protect groundwater recharge areas.
 - Policy PSF 1.17.1: Known recharge areas along the river and canals shall be protected and maintained to allow recharge to continue.
 - Policy PSF 1.17.2: Churchill County will consider the adoption of an ordinance to protect recharge areas along the river and canals.

Map 11-1



To promote a positive image of the County, all development fronting the major highways must adhere to appropriate landscaping and signage requirements, and only those land uses that are aesthetically appealing should be encouraged.

- Certain objectionable land uses should be excluded within a half mile distanced from gateway roads. These include brothels, junkyards, and similar uses.
- Water is scarce in the desert, so landscaping should not be required for new development, except in special situations such as when buffers are needed between incompatible developments.
- Paved parking is expensive to developers, and the lack of asphalt contractors in the County makes it difficult to pave parking lots. Surfacing should not be required for parking lots, except in specific situations.
- While Churchill County has not allowed standard-sized billboards through its history (with some exceptions) they are important for making a good impression on the traveling public. Standard size billboards should be allowed outside of the main populated areas. Closer to the City of Fallon, billboards should be excluded, and signage should be limited to monument-style signs or smaller pole signs.

INFRASTRUCTURE IN THE URBANIZING AREA

Development must also promote a safe and healthy environment consistent with the County's rural lifestyle and high quality of living. In 2003, Churchill County embarked on the development of a County-owned water and sewer system, which is described in more detail under Public Services and Facilities, in anticipation of accelerated growth and the need to prepare for the provision of efficient public services and facilities while ensuring protection of our water and other valuable resources. In conjunction with the provision of these utilities, the County adopted development standards in 2005 that require appropriate infrastructures such as water, sewer, streets, and sidewalks and also require all new development to buffer existing low-density development. Development standards and Master Plan policies, such as the Recreation and Transportation elements, will also ensure that appropriate connectivity between developments via the road network, bike routes, and trails will connect and provide access to open spaces and parks.

The Land Use element establishes a planned pattern for the development of Churchill County for the next 20 years. When reviewing any development proposals, consideration must be given to the Master Plan as a whole to address all goals and policies and ensure that growth is sustainable, protects the environment and our natural resources, and promotes livable, attractive neighborhoods.

Land Use Goals and Policies

- **GOAL LU 1: Retain the rural character of the County outside of the Urbanizing and Industrial land use designations, while providing opportunities for managed growth and development within Urbanizing and Industrial designations.**
 - Policy LU 1.1: Churchill County shall identify incentives for developers that will encourage preservation of agriculture and open spaces and expand residential, commercial, or industrial opportunities.
 - Policy LU 1.2: Promote conservation easements to protect and preserve agriculture, open spaces, and water resources.
 - Policy LU 1.3: Track and update data on resource use and revenues.
 - Policy LU 1.4: New development must buffer existing agricultural uses to prevent conflicts.

- Policy LU 1.5: Review the TDR program and conservation easement program for needed improvements. Look for opportunities to use TDRs when allowing increased density, rezone requests, and planned unit developments. Coordinate efforts with the Navy, other funders, and stakeholders.
- *GOAL LU 2: All new development must be comprehensively designed to guarantee a sustainable, safe, and healthy environment, and integrate into the surrounding neighborhoods.*
 - Policy LU 2.1: In reviewing any development proposals, Churchill County shall consider issues of community character, balance, sustainability, environmental impact, safety, aesthetics, and efficient service provision.
 - Policy LU 2.2: Construct water and sewer infrastructures to County standards.
 - Policy LU 2.3: Design and locate walking trails/sidewalks and bike lanes to provide connectivity with adjoining developments and parks in the vicinity.
 - Policy LU 2.4: On and off-site road improvements shall be consistent with the County transportation plan and shall meet development standards.
 - Policy LU 2.5: Churchill County shall only approve requests for special use permits, land divisions, and other development proposals that are consistent with the land use map and the policies contained within the Master Plan.
 - Policy LU 2.6: Enforce friction zone standards.
 - Policy LU 2.7: All new or expanding land uses within the gateway corridors must comply with current landscaping and signage requirements and shall not adversely affect the neighborhood.
- *GOAL LU 3: Development shall be beneficial to the County and shall promote sustainability.*
 - Policy LU 3.1: Churchill County shall ensure that green energy projects meet environmental standards and have a positive impact on the community.
 - Policy LU 3.2: Minimize development and encroachment within the buffer zone around NAS Fallon and its bombing ranges. Continue implementing the NAS Fallon Overlay Zone standards and other agreements with NAS Fallon.
 - Policy LU 3.3: Continue implementing the transfer of development rights, conservation easement, and cluster development programs to retain agriculturally productive lands.
- *GOAL LU 4: Infrastructure expansion shall be cost effective.*
 - Policy LU 4.1: Encourage infill development, particularly in the urbanizing area, to provide a cost-effective provision of utilities.
 - Policy LU 4.2: Coordinate infrastructure planning activities near the Fallon city limits with the City government, and coordinate infrastructure planning activities east of the Hazen area with the City of Fernley.
- *GOAL LU 5: Encourage industrial expansion that is supportive of economic development and jobs creation.*
 - Policy LU 5.1: Undertake projects to reduce obstacles to broad development of industrial lands, especially in the Hazen-Swingle Bench Special Planning Area.
 - Policy LU 5.2: Pursue a lands bill to reduce the amount of federal land "checker-boarding," with a focus on areas that have the Industrial land use designation.
- *GOAL LU 6: Periodically review and modify land-use designation and zoning district maps to ensure that they accurately relate to actual land uses and reflect the desired future condition for the location.*
 - Policy LU 6.1: Locate different agricultural zoning districts to better support viable agricultural operations.
 - Policy LU 6.2: Locate commercial and industrial zones to better separate commercial uses from industrial activity.
 - Policy LU 6.3: Locate dense residential zones where they can take advantage of community sewer and water services.

APPENDIX TO EXHIBIT 4

APPELLANT'S MASTER PLAN POLICY CROSS-REFERENCE MATRIX

This matrix is prepared by Appellant as a navigation and analytical aid. It is not an official Churchill County document and does not replace the Master Plan provisions reproduced in this exhibit.

Master Plan provision	County/staff treatment in ZC26-2	Ground III / appeal relevance
ED 9 / ED 9.1 / ED 9.2	Staff relied on industrial expansion, highway location, employment opportunities, and attraction of battery-testing/other industry.	Supports the amendment and is expressly acknowledged by Appellant; Ground III does not dispute these policies.
LU 1 / LU 5 / LU 5.1 / LU 6.2	Staff relied on the Industrial designation, managed industrial growth, economic development, reduced obstacles to industrial land, and separation from commercial activity.	Supports the amendment and is acknowledged; it does not by itself resolve conformity with other applicable Plan policies.
LU 3	Staff cited an expanded tax base and "minimal disruption" as satisfying the goal that development be beneficial and promote sustainability.	Ground III asks for the factual basis for the public-benefit/minimal-disruption conclusions and meaningful consideration of LU 3's sustainability component.
Chapter 9 / PSF 1	Not included in staff's nine-policy Master Plan table for ZC26-2.	The Plan treats growth, water, sewer, utilities, fire and police as integrated planning subjects; permanent water/power/septic were stated to come later.
PSF 1.8	Not identified by staff for ZC26-2.	Used illustratively, not asserted as directly triggered: the Plan recognizes a relationship between water-service adequacy and fire-flow capability.
PSF 1.11 / 1.11.1 / 1.12 / 1.13 / 1.14	Not identified in staff's Master Plan table.	Ground III does not claim an adverse water impact; it argues that unknown permanent source/demand limits the record's ability to determine which water policies are implicated and whether affirmative conformity can be found.
Chapter 3 / CNR 6.3 / CNR 6.5	Not identified in staff's Master Plan table.	The Plan addresses air/resource protection and consideration of new-project air impacts; relevance depends on sufficient information about the proposed destructive testing.
Chapter 4 - Hazards and Hazard Mitigation	Not identified in staff's Master Plan table.	The Plan recognizes manmade hazards including hazardous-material releases and utility failures. Ground III uses this to show hazard mitigation is part of the same comprehensive Plan, not to establish that a particular hazard will occur.
Introduction / whole-plan direction	Staff found substantial compliance primarily through the Industrial designation and selected supporting policies.	The Plan states development-related actions must conform to the Master Plan and development proposals should be considered against the Plan as a whole.

EXHIBIT 5

BASIN 101 / CARSON DESERT

NDWR AND CHURCHILL COUNTY WATER EVIDENCE

ZC26-2 - APN 004-431-44

Purpose. This exhibit documents the hydrographic-basin context relevant to Ground IV's challenge to the adequacy of the record concerning permanent water source, demand, rights, and infrastructure. It is not offered to establish that ZC26-2 will necessarily cause an adverse water impact or that the applicant lacks lawful water rights.

Part A - NDWR GIS. Appellant-captured screenshot from the Nevada Division of Water Resources public Water Rights GIS. The search field shows parcel 443144 (APN 004-431-44 without formatting), the parcel is selected in cyan, and the map displays the nearby hydrographic-basin labels, including 101 Carson Desert and 074 White Plains.

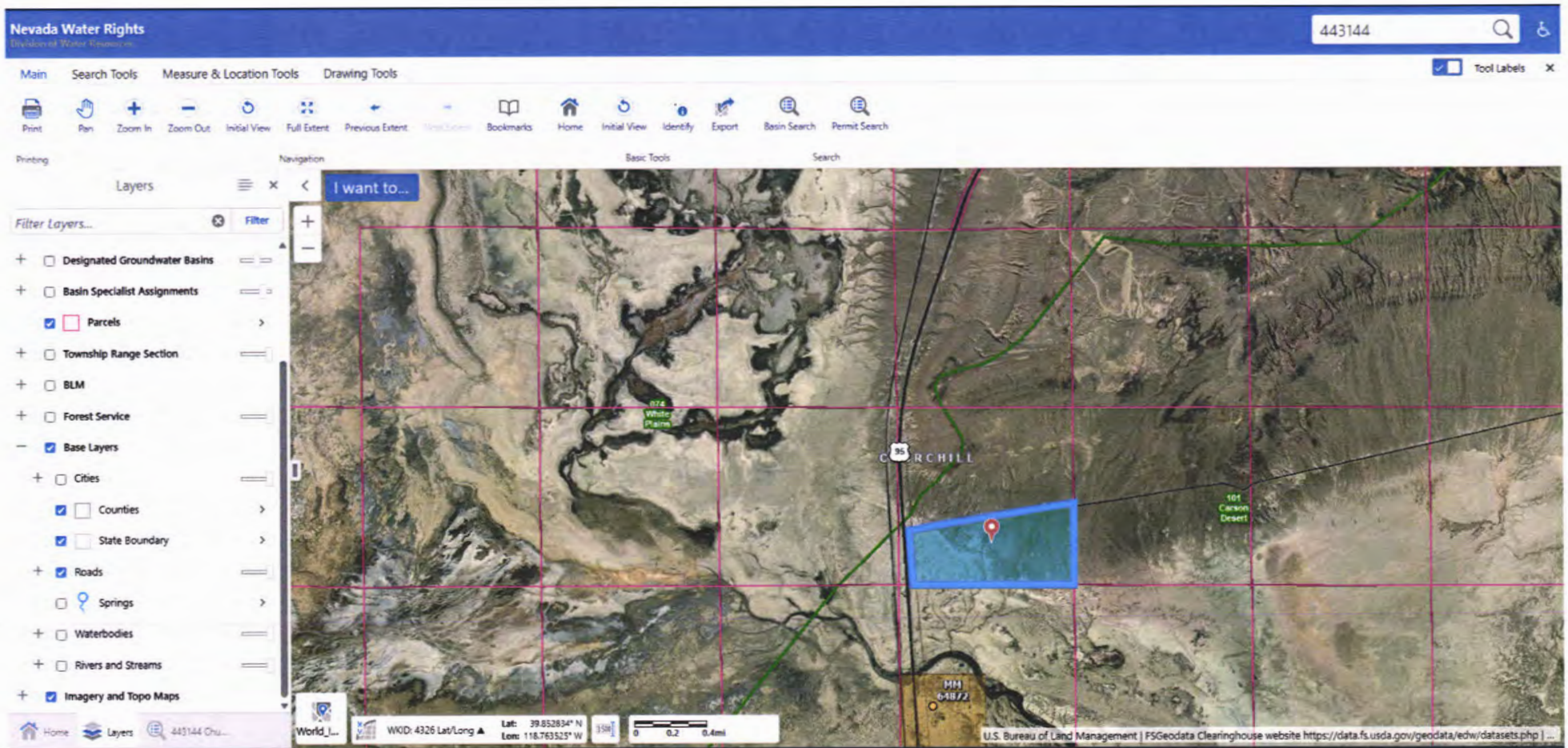
NDWR communication. Because the parcel lies near a mapped hydrographic-basin boundary, Appellant contacted the Nevada Division of Water Resources regarding its basin location. Catherine with NDWR advised Appellant that APN 004-431-44 is within Hydrographic Area 101 (Carson Desert). This statement records Appellant's account of that communication and is not represented as a formal written NDWR determination.

Part B - NDWR Hydrographic Regions and Basins. Complete four-page NDWR county listing. The Carson River Region entry identifies Basin 101 as Carson Desert, includes Churchill County, and identifies the basin as designated.

Part C - Churchill County Water Conservation Plan. Relevant consecutive pages from the County's June 2019 Water Conservation Plan are included to preserve County water-planning context, including Figure 2's hydrographic-basin map, County water-resource planning, and the County's discussion of Basins 101 and 102 and Basin 101 recharge.

Highlighting and limitations. Yellow highlighting is a navigation aid only. Basin designation, planning statements, and recharge information are presented for context. No simple inference is made from these materials regarding unused groundwater capacity, project-specific water availability, or the legal availability of water rights for ZC26-2.

EXHIBIT 5 - PART A
NDWR Water Rights GIS - APN 004-431-44 / Search 443144



Full Appellant-captured NDWR GIS screenshot retained to preserve agency branding, parcel search, selected parcel, basin labels, surrounding geography, and map context.



NEVADA DIVISION OF WATER RESOURCES

MENU

Hydrographic Regions and Basins

Overview Carson City Churchill Clark Douglas Elko Esmeralda
Eureka Humboldt Lander Lincoln Lyon Mineral Nye
Pershing Storey Washoe White Pine

Region	Basin	Sq Miles	Acres	Churchill Hydrographic Basin/Sub-Basin Name	Counties	Nearest Cities	Designated
[4] HUMBOLDT RIVER REGION (Hydrographic Region 4)							
4	73	635	406400	Lovelock Valley	Pershing; Churchill	Rye Patch; Lovelock	Yes
4	74	164	104960	White Plains	Churchill; Pershing	Lovelock; Fernley	Yes
Total		16,843	10,779,520	Square miles/acres			
[5] WEST CENTRAL REGION (Hydrographic Region 5)							
5	75	178	113920	Brady Hot Springs Area	Churchill; Lyon	Bradys Hot Springs; Fernley	Yes
5	76	120	76800	Fernley Area	Lyon; Washoe; Storey; Churchill	Fernley; Hazen	Yes
5	77	58	37120	Fireball Valley	Churchill	Nixon; Fernley	No
5	78	967	618880	Granite Springs Valley	Pershing; Churchill	Lovelock; Gerlach	No
Total		1,656	1,059,840	Square miles/acres			
[6] TRUCKEE RIVER REGION (Hydrographic Region 6)							
Total		110,545	70,748,800	Square miles/acres			

Region	Basin	Sq Miles	Acres	Hydrographic Basin/Sub-Basin Name	Counties	Nearest Cities	Designated
6	80	371	237440	Winnemucca Lake Valley	Pershing; Washoe; Churchill	Nixon; Gerlach	No
6	81	672	430080	Pyramid Lake Valley	Washoe; Churchill	Nixon; Sutcliffe	No
6	82	92	58880	Dodge Flat	Washoe; Churchill	Wadsworth	No
Total		2,300	1,472,000	Square miles/acres			
[8] CARSON RIVER REGION (Hydrographic Region 8)							
8	101	2022	1294080	Carson Desert	Churchill; Pershing; Lyon	Fallon; Stillwater	Yes
8	102	480	307200	Churchill Valley	Lyon; Churchill; Douglas; Storey	Fallon	Yes
Total		3,519	2,252,160	Square miles/acres			
[9] WALKER RIVER REGION (Hydrographic Region 9)							
9	110A	502	321280	Walker Lake Valley/Schurz Sub-Area	Mineral; Lyon; Churchill	Schurz	No
Total		3,046	1,949,440	Square miles/acres			
[10] CENTRAL REGION (Hydrographic Region 10)							
10	122	1277	817280	Gabbs Valley	Mineral; Nye; Churchill	Gabbs	Yes
10	123	227	145280	Rawhide Flats	Churchill; Mineral; Lyon	Schurz; Fallon	No
10	124	285	182400	Fairview Valley	Churchill; Mineral	Frenchman; Fallon; Eastgate	Yes
10	125	43	27520	Stingaree Valley	Churchill	Frenchman; Eastgate	Yes
10	126	110	70400	Cowkick Valley	Churchill	Frenchman; Eastgate	Yes
10	127	216	138240	Eastgate Valley Area	Churchill	Eastgate	Yes
10	128	1303	833920	Dixie Valley	Churchill; Pershing; Lander	Dixie Valley; Fallon	Yes
10	129	742	474880	Buena Vista Valley	Pershing; Churchill	Unionville; Lovelock	Yes
10	133	416	266240	Edwards Creek Valley	Churchill	Eastgate; Austin	No
Total		110,545	70,748,800	Square miles/acres			

Region	Basin	Sq Miles	Acres	Hydrographic Basin/Sub-Basin Name	Counties	Nearest Cities	Designated
Total		46,783	29,941,120	Square miles/acres			
Total		110,545	70,748,800	Square miles/acres			

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Contact Info

901 S. Stewart St., Suite 2002

Carson City, NV 89701

(775) 684-2800

Additional Resources

Department of Conservation and Natural Resources

Division of Forestry

Division of State Parks

Division of State Lands

Natural Heritage Program

State Historic Preservation Office

Nevada Division of Environmental Protection

Disclaimer

Water Resources makes every effort to ensure that information posted on this website is up-to-date, accurate, and reflects the officially promulgated documents. While we try to keep the information timely and accurate, we make no expressed or implied guarantees. We will correct errors as they are brought to our attention.

Physical Setting

Churchill County is located approximately 60 miles east of Reno and 30 miles east of the City of Fernley. The majority of the population within Churchill County lives within the Carson Desert Hydrographic Basin (Basin 101) and the Churchill Valley Hydrographic Basin (Basin 102) as shown in Figure 2.

Climate

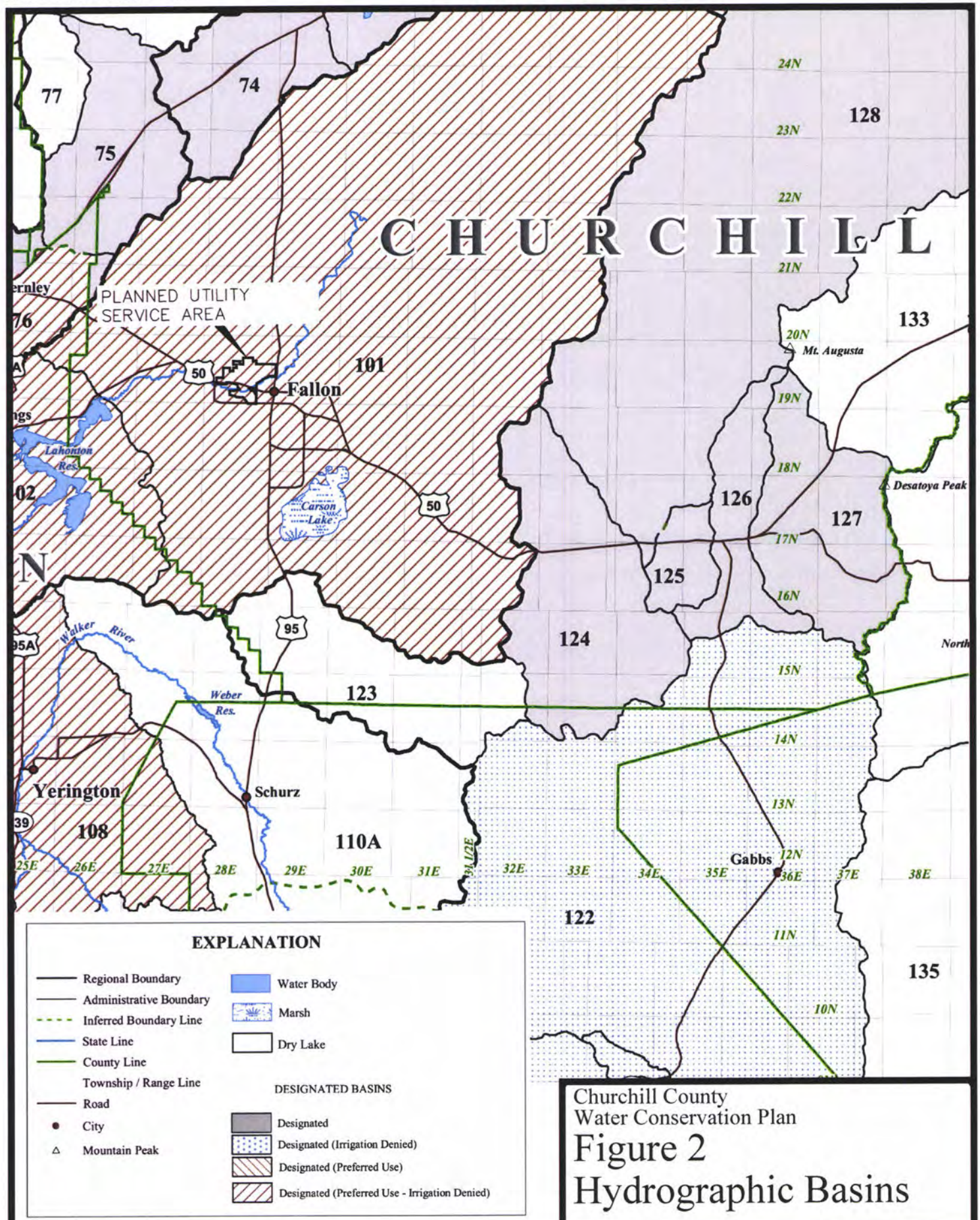
Churchill County experiences a high desert climate with hot summers, cold winters, and an average annual precipitation of less than 5 inches. Average temperatures: summer 85 degrees; winter 39 degrees; and an average diurnal temperature variation of about 35 degrees.

Water Resources and Allotment

Churchill County adopted a Water Resources Plan in 2000 and completed an update in 2007. The Water Resources Plan identifies all potential water sources and water rights owned by Churchill County. The plan is available on the Churchill County web page, in the Planning Department section: <http://www.churchillcounty.org/index.aspx?nid=565>. Churchill County owns a total of 5,775 acre feet annual (AFA) of underground water rights. The total duty of Churchill County owned underground water rights associated with the Sand Creek Well is 762 AFA and for the Pine Grove Wells 1 and 2 is 87.2 AFA each. Churchill County also owns a significant quantity of surface water rights and continues to accumulate surface water rights for recharge and potential future surface water treatment through various programs.

Source Water Protection

A Community Source Water Protection Plan was adopted by the Churchill County Commissioners in December, 2015 (2015 CSWPP). The purpose of the 2015 CSWPP is to provide a framework for the long term protection of the public drinking water supply sources which includes 1) developing a plan to ensure the availability of clean drinking water for future generations, 2) encourages water resource protection measures to promote sustainable economic growth, 3) increases community awareness of the source of the drinking water supply and how the public can help protect it and 4) to promote collaboration and communication amongst all effected entities. The plan is available on the Churchill County web page, in the Planning Department section: <http://www.churchillcounty.org/index.aspx?nid=565>.



Existing Water Utility System

In 2019, Churchill County completed a Water Master Plan (2019 WMP) which identified existing and projected water customers and corresponding water use, the condition and capacity of the existing water system and recommended improvements. The 2019 WMP is available on the Churchill County web page in the Water and Wastewater Department section: <http://www.churchillcounty.org/index.aspx?nid=153>.

The Churchill County water system locations are illustrated in Figure 1, page 2. The water system is comprised of wells, a water treatment plant, storage, pumping and distribution. The primary production well is the 395 foot deep Sand Creek well capable of pumping upwards of approximately 1,000 gallons per minute (GPM). A 750 GPM water treatment facility lowers manganese and arsenic to comply with federal drinking water standards. A 1.0 million gallon (MG) treated water storage tank, 950 GPM booster pump station (3 pumps) and a 3,700 GPM fire pump (1 pump) provides potable water to the distribution system for typical municipal uses including fire protection. The water distribution system is comprised of approximately 45,000 lineal feet of water mains ranging in size from 6 inches to 12 inches. All services are metered and a tiered meter rate was codified under Churchill County Code (CCC) 13.04.300 to encourage conservation.

The 2019 WMP identified that the historical annual average day usage varied over the past 6 years from 479 GPD/customer to 520 GPD/customer and averaged 497 gallons per day per customer. Customer and system usage history is contained in the 2019 WMP. Unusual or unaccounted for use could show a problem with a meter. If a customer has unusual water use for their property, a report is run to gather information from the meter which could show if there is a leak. If there are any suspected problems with a meter or transponder, it will be replaced. Meters have been, and will continue to be, tested periodically to ensure accuracy and the County will maintain water pumping and consumption records for the water system.

Unaccounted for water in the Churchill County system has varied from a low of 3.3% to a high of 12% when system wide flushing was undertaken. Unaccounted for water is water that is lost in the system for such items as firefighting, system leaks and breaks, illegal connections, and generally any other unknown and unmetered water use. A common acceptable standard for unaccounted for water is less than 10%.

Conservation

Conservation incentives are measures that increase awareness and encourage conservation. The County has long supported water conservation practices due to the desert environment and the reliance upon surface water inflow from the Carson River and the Newlands Project which is the primary source of groundwater recharge. County building codes require low flow fixtures, providing for standards for new development as well as current properties; the landscape ordinance encourages use of desert tolerant plants and promotes xeriscaping (CCC16.16.020.4) (*See Appendix A*). Water conservation measures are supported through the following County Ordinance (also refer to Appendix A for specific wording):

- CCC 13.04.190. Wasting of water is prohibited.
- CCC 13.04.200. Allows for watering schedules and off peak watering.
- CCC 13.04.280. Requires water meters for all service connections.
- CCC 13.04.300. Identifies the tiered rate structure to promote the conservation of water, including without limitation, an estimate of the manner in which the tiered rate structure will impact the consumptive use of water.
- CCC 13.04.520: Allows prosecution for the illegal use of water.
- CCC 14.12.030. Adopts the International Plumbing Codes that requires water efficient building plumbing systems. This, among other things, provides standards for water efficiency for new development
- CCC 16.16.020. Encourages use of desert tolerant plants and promotes xeriscaping.
- CCC 16.16.010.9. Requires distribution system pressures to be less than 100 psi

In addition. The following programs also promote and support water conservation efforts;

- Flow meters are equipped with transponders that records current meter history and a report can be run that will show possible leaks on a property such as a continuous slow flow from a toilet, sink, etc.,
- Flow meters are tested periodically to ensure accuracy.
- Tracking customer water usage to identify trends in water use and the effectiveness of water conservation measures.
- Encourage reuse of treated effluent from County Water Reclamation Facility,
- Support of Truckee Carson Irrigation District (TCID) and agricultural efficiency programs,
- Continued tracking of unaccounted for water and minimizing unaccounted for water,
- Periodic review of conservation program effectiveness, and
- Support of water conservation education through:
 - Funding of the Churchill County Museum's water conservation exhibits,
 - Support of the Newlands Water Protection Association
 - Billing inserts promoting conservation during warmer months are included in monthly bills encouraging customers to be mindful of where and how their water is being used,
 - Public school outreach,
 - Educational outreach through various organizations such as Future Farmers of America, Conservation Districts, and Cooperative Extension

Water Resource Planning and Conservation

Effective water resources protection and planning is essential to the long-term sustainability of the community. To this end the County has implemented several measures, including adoption of water resource protection policies in the 2015 County Master Plan (Goal PSF 2 & Goal CNR 2), the County Water Resource Plan to ensure continued recharge to the aquifers and protection of vital resources and the County Water Master Plan to track customer water usage, unaccounted for water losses and to maintain efficient water distribution systems.

The County has in the past and will continue in the future to work closely with the Carson Water Subconservancy District (CWSD), United States Geological Survey (USGS), United States Fish and Wildlife Services, Truckee-Carson Irrigation District (TCID), the State Engineer's office, legislators and others in support of any measures that support water conservation and in further studying and understanding water conservation measures, available water inventories and water table trends, particularly as it relates to Basins 101 and 102.

Water Shortage Contingency Plan

The majority of Churchill County's residents live in the Carson Desert Hydro-basin 101, or the Churchill Valley Hydro-basin 102. Ninety-eight percent of Basin 101's recharge comes from infiltration of waters from the Carson and Truckee Rivers through the Truckee Carson Irrigation District canal system. Therefore sustainment of their flows and of existing decrees and agreements is vital to water storage, recharge and contingency planning in Churchill County.

In addition, land and water conservation programs and support for agriculture, wetlands and improved agricultural practices creates and sustains recharge and storage.

Existing water right dedication requirements for all development ensures an appropriate drought reserve or contingency buffer.

Use of Effluent Water

As Churchill County's population grows, the use of reclaimed wastewater is essential to reduce the demand for groundwater. Currently, Churchill County has a discharge permit for the Moody Lane Water Reclamation Facility to discharge tertiary treated effluent to the Soda Lake Drain—this is "counted/credited" as water to the Stillwater Wildlife Refuge.

Drought Response Plan

Under normal circumstances Churchill County does not need drought reserves as the water source and allotment are adequate. However, if a drought situation is identified, Churchill County customers are expected to take additional action to reduce their water use. The objective of the plan would be to manage the available resources to ensure continued supply of potable water during periods of drought or extended drought.

It is envisioned that voluntary conservation will be sufficient to ensure an adequate supply of water and reduce water usage. However, if a sustained drought (lack of precipitation) is encountered, it may be necessary to implement mandatory restrictions in order to ensure an adequate supply of water to meet essential needs.

Churchill County plans for three stages of drought response as follows: 1-Warning Stage, 2 - Alert Stage, and 3 - Emergency Stage.

EXHIBIT 6

CHURCHILL COUNTY

MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

Hazardous-Materials and Emergency-Response Provisions Relevant to ZC26-2

Official source. Churchill County Multi-Jurisdictional Hazard Mitigation Plan (2016), obtained from Churchill County's official Document Center.

Purpose. This exhibit supports the limited propositions advanced in Grounds III and V: Churchill County's own hazard-planning framework treats hazardous-material events, emergency response, and mitigation capability as legitimate County planning subjects. It is not offered to establish that Rivian's proposed destructive-battery-testing facility will cause a hazardous-material event, that County emergency services are inadequate, or that a particular response plan or mitigation requirement automatically applies to ZC26-2.

Ground III connection. The appeal states that the County's Multi-Jurisdictional Hazard Mitigation Plan identifies a Churchill County Hazardous Materials Response Plan providing guidance to emergency-response personnel and a resource directory. The included Planning Process page reproduces that statement in the County's Plan.

Ground V connection. The included Hazard Analysis pages show that the Plan separately evaluates hazardous-material events, including fixed-site facilities and response-access considerations. The included Capability Assessment pages identify the Hazmat Plan, Emergency Operations Plan, fire/zoning codes, and County personnel/resources associated with manmade hazards, vulnerability assessment, and emergency services.

Audit limitation. The Plan is a general hazard-mitigation document, not a project-specific analysis of ZC26-2. Nothing in this exhibit is represented as a finding that the proposed facility creates a particular hazard or requires a particular mitigation measure. Those project-specific questions remain the evidentiary issue raised in the appeal.

Scope and highlighting. This exhibit contains the Plan cover, Executive Summary, adoption/context page, the page specifically identifying the County Hazardous Materials Response Plan, the complete contiguous hazardous-materials hazard-analysis segment selected for context, and the relevant capability-assessment pages. Yellow highlighting is a navigation aid only; surrounding source text is preserved.



Churchill County Multi-Jurisdictional Hazard Mitigation Plan 2016



Prepared by:

R O Anderson

P.O. Box 2229

Minden, NV 89423

Minden, NV Churchill County 2016 MJHMP - official source PDF p. 1 (Plan cover)

OFFICE

- Minden, Nevada
- Reno, Nevada
- South Lake Tahoe, California

Executive Summary

Across the United States, natural and human-caused disasters have led to increasing levels of death, injury, property damage, and interruption of business and government services. The toll on families and individuals can be immense and damaged businesses cannot contribute to the economy. The time, money and effort to respond to and recover from these emergencies or disasters divert public resources and attention from other important programs and problems. Churchill County, Nevada, recognizes the consequences of disasters and the need to reduce the impacts of natural and human-caused hazards.

The elected and appointed officials of Churchill County (the County), the City of Fallon (the City), and the Fallon Paiute-Shoshone Tribe (FPST) also know that with careful selection, mitigation actions in the form of projects and programs can become long-term, cost effective means for reducing the impact of natural and human-caused hazards. Applying this knowledge, the Churchill County Hazard Mitigation Planning Committee prepared the *Churchill County, Nevada, Multi-Jurisdictional Hazard Mitigation Plan*. With the support of various County and City officials, the State of Nevada, and the United States Department of Homeland Security/Federal Emergency Management Agency (FEMA), this plan is the result of several months' worth of work to create a hazard mitigation plan that will guide the County, City of Fallon, and the Fallon Paiute-Shoshone Tribe toward greater disaster resistance in full harmony with the character and needs of the community and region.

People and property in Churchill County are at risk from a variety of hazards that have the potential for causing widespread loss of life and damage to property, infrastructure, and the environment. The purpose of hazard mitigation is to implement actions that eliminate the risk from hazards, or reduce the severity of the effects of hazards on people and property. Mitigation is any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event. Mitigation encourages long-term reduction of hazard vulnerability. The goal of mitigation is to save lives and reduce property damage. Mitigation can reduce the enormous cost of disasters to property owners and all levels of government. In addition, mitigation can protect critical community facilities, reduce exposure to liability and minimize community disruption. Preparedness, response, and recovery measures support the concept of mitigation and may directly support identified mitigation actions.

The *Churchill County, Nevada Multi-Jurisdictional Hazard Mitigation Plan* has been prepared in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act or the Act), 42 U.S.C. 5165, enacted under Sec. 104 the Disaster Mitigation Act of 2000 (DMA 2000), Public Law 106-390 of October 30, 2000. This plan identifies hazard mitigation actions intended to eliminate or reduce the effects of future disasters throughout the County and City of Fallon.

This section provides an overview of the Disaster Mitigation Act of 2000 (DMA 2000; Public Law 106-390), the adoption of the updated *Churchill County, Nevada, Multi-Jurisdictional Hazard Mitigation Plan* (MJHMP) by the local governing body, and supporting documentation for the adoption.

1.1 DISASTER MITIGATION ACT OF 2000

The DMA 2000 was passed by Congress to emphasize the need for mitigation planning to reduce vulnerability to natural and human-caused hazards. The DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act; 42 United States Code [USC] 5121-5206 [2008]) by repealing the act's previous Mitigation Planning section (409) and replacing it with a new Mitigation Planning section (322). In addition, Section 322 provides the legal basis for the Federal Emergency Management Agency's (FEMA's) mitigation plan requirements for mitigation grant assistance.

To implement the DMA 2000 planning requirements, the Federal Emergency Management Agency (FEMA) published an Interim Final Rule in the *Federal Register* on February 26, 2002. This rule (44 Code of Federal Regulations [CFR] Part 201) established the mitigation planning requirements for states, tribes, and local communities. The planning requirements are described in detail in Section 2, and identified in their appropriate sections throughout this Plan.

1.2 ADOPTION BY THE LOCAL GOVERNING BODY AND SUPPORTING DOCUMENT

The requirements for the adoption of an MJHMP by the local governing body, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 REQUIREMENTS: PREREQUISITES

Adoption by the Local Governing Body

Requirement §201.6(c)(5): [The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).

Element

Has the local governing body adopted the plan?

Is supporting documentation, such as a resolution, included?

Source: FEMA, March 2008.

Churchill County, the City of Fallon, and the Fallon Paiute Shoshone Tribe are the jurisdictions represented in this MJHMP. There are no other political subdivisions within Churchill County. The MJHMP meets the requirements of Section 409 of the Stafford Act and Section 322 of the DMA 2000.

The local governing body of the County (Churchill County Board of Commissioners), the City (City of Fallon City Council), and the FPST (Tribal Council) has adopted this MJHMP. The signed resolutions are provided in Appendix A.

- ***Carson River Geographic Response Plan (2006)***: This is a regional plan covering five counties in two states. The plan was developed to protect the health, safety, environment, and property (both public and private) from the effects of hazardous materials incidents in or near the Carson River.
- ***Carson River Watershed Discovery Report (2012)***: Intended to initiate watershed-wide discussions about increasing resilience to flooding. The goal of Discovery is to determine which areas within a watershed require mapping, risk assessment, or mitigation planning assistance.
- ***Carson River Watershed Regional Floodplain Management Plan (Carson Water Sub Conservancy District, 2014)***: This plan provides strategies for floodplain management that can be applied regionally as well as locally.
- ***Churchill County Building Code***: These regulations concern zoning districts, variances, and general development standards within the Churchill County and include the 2006 IBC.
- ***Churchill County Fire Plan (2004, Resource Concepts Incorporated)***: Community Guidelines.
- ***Fallon/Churchill Fire Code (Updated every 3 Years)***: This document includes a wildland/urban interface section that delineates regulations for building and maintaining homes in wildland fire prone areas.
- ***Churchill County Hazardous Materials Response Plan (Updated Annually)***: This plan provides guidance to emergency response personnel on the general plan of action for a response to a hazardous materials emergency and provides for a resource directory.
- ***Churchill County Mass Illness Plan (Updated Annually)***: This plan addresses the County's response to a pandemic/influenza outbreak.
- ***Churchill County Master Plan – (Churchill County Planning 2015)***: Guiding principle includes Section 4, which addresses mitigation, and Section 3, which encourages floodplain management strategies.
- ***Churchill County Water Conservation Plan (2014)***: The purpose of the plan is to document current conservation efforts and provide a strategy for future water saving measures and incentives.
- ***City of Fallon Master Plan (1972)***: This plan provides land use guidance.
- ***Community Wildfire Protection Plan, RCI (November 2004)***: This document includes findings and recommendations for mitigating the threat to property from wildland fires.
- ***Design, Estimating and Construction Review Truckee Canal Risk Assessment (2014)***: This document evaluates the Truckee Canal system and provides a risk assessment.
- ***Emergency Operations Plan (Churchill County Emergency Management 2015)***: This document is the main reference source for managing disasters and large-scale emergencies in Churchill County. Mitigation is discussed in Annex P.

5.2.5 Hazardous Materials Events

Planning Significance – Churchill County – High

City of Fallon – Moderate

Fallon Paiute-Shoshone Tribe - Moderate

5.2.5.1 Nature

Hazardous materials may include hundreds of substances that pose a significant risk to humans. These substances may be highly toxic, reactive, corrosive, flammable, radioactive, or infectious. Hazard materials are regulated by numerous Federal, State, and local agencies including the U.S. Environmental Protection Agency (EPA), U.S. Department of Transportation (DOT), National Fire Protection Association, FEMA, U.S. Army, and International Maritime Organization.

Hazardous material releases may occur from any of the following:

- Fixed site facilities (such as refineries, chemical plants, storage facilities, manufacturing, warehouses, wastewater treatment plants, swimming pools, dry cleaners, automotive sales/repair, and gas stations)
- Highway and rail transportation (such as tanker trucks, chemical trucks, and railroad tankers)
- Air transportation (such as cargo packages)
- Pipeline transportation (liquid petroleum, natural gas, and other chemicals)

Unless exempted, facilities that use, manufacture, or store hazardous materials in the United States fall under the regulatory requirements of the Emergency Planning and Community Right to Know Act (EPCRA) of 1986, enacted as Title III of the Federal Superfund Amendments and Reauthorization Act (42 USC 11001–11050; 1988). Under EPCRA regulations, hazardous materials that pose the greatest risk for causing catastrophic emergencies are identified as Extremely Hazardous Substances (EHSs). These chemicals are identified by the EPA in the *List of Lists – Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-to-Know Act (EPCRA) and Section 112 of the Clean Air Act*. Releases of EHSs can occur during transport to and from fixed site facilities. Transportation-related releases are generally more troublesome because they may occur anywhere, including close to human populations, critical facilities, or sensitive environmental areas. Transportation-related EHS releases are also more difficult to mitigate due to the variability of locations and distance from response resources.

In addition to accidental human-caused hazardous material events, natural hazards may cause the release of hazardous materials and complicate response activities. The impact of earthquakes on fixed facilities may be particularly serious due to the impairment or failure of the physical integrity of containment facilities. The threat of any hazardous material event may be magnified due to restricted access, reduced fire suppression and spill containment, and even complete cut-off of response personnel and equipment. In addition, the risk of terrorism involving hazardous materials is considered a major threat due to the location of hazardous material facilities and

transport routes throughout communities and the frequently limited antiterrorism security at these facilities.

On behalf of several Federal agencies including the EPA and the DOT, the National Response Center (NRC) serves as the point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment within the United States.

5.2.5.2 History

The Nevada Division of Environmental Protection reports that since 1999, oil and chemical spills have occurred within the County as shown in the table below.

Table 5-12: Hazardous Material Release in Churchill County

Location	Date	Substance	Description
EW Site 70 in Dixie Valley NAS Fallon	2/11/2005	Diesel Fuel	Mechanical malfunction of diesel generator caused >25 gal. of diesel to be released. Soil excavated.
11 Miles N. of Fallon, Kennametal Corp	2/12/2005	Neutralization Water	200 gal. from equipment failure.
Hanger 1 NAS Fallon	3/9/2005	Aircraft Fuel	>50 gal. of aircraft fuel spilled from tank incorrectly stored.
Stillwater Geothermal Plant	3/14/2005	Fuel	Soil around Turbine/Generators contaminated by an unknown amount of fuel.
NAS Fallon	5/31/2005	Diesel	150 gal. leaked into soil from tank.
US 95 27 Miles South of Fallon	3/9/2006	Diesel	70 gal. from traffic accident
US 50 West of Fallon	8/21/2007	Diesel	200-300 cy. from parked vehicles over time
Electronic Warfare Site Dixie Valley	9/12/2007	Diesel Fuel	>15 gal. from failed "O" ring caused diesel to spew.
Transport Yard NAS Fallon	5/29/2008	Sewage	1000 gal. of sewage release when sewage line backed up.
Unknown	6/13/2008	Diesel	1400 gal. of fuel release midair jet collision.
Railroad Fuel Off-Load Facility, Hazen	7/18/2008	Diesel Fuel	79 gal. spill due to operator error.
W. NV Railroad Park, Hazen	3/26/2009	Diesel Fuel	>15 gal. from pulled hose of rail car.
11 Miles N. of Fallon, Kennametal Corp	7/19/2010	Effluent Water	17,250 gal released which contain gypsum and iron from leaking filter overnight
Hanger 5, NAS Fallon	10/6/2010	Diesel Fuel	Unknown qty. historic releases from aircraft parked near hanger. Detection from soil samples.
Fallon			
US 50 @ York	8/29/2005	Diesel Fuel	100 gal. spill from ruptured saddle tank.
MP 12.11 of Fallon Lead Industrial	8/29/2005	Diesel Fuel	50 gal. spill from traffic accident.
Former Standard Industrial Minerals Site	Unknown	Arsenic	400,000 cy arsenic in barite tails and ore from mil
283 Sherman St.	10/9/2006	Diesel Fuel	700-800 gal. spill from tank rupture.
Bus Barn Sherman Way	11/14/2006	Heating Oil	900 gal. heating oil from tank rupture

Table 5-12: Hazardous Material Release in Churchill County

Location	Date	Substance	Description
Pine Grove Sewage Plant	1/7/2007	Sewage	80-100 gal partially treated sewage release unknown
A&K Hazen Sand & Gravel off US 50	8/3/2007	Diesel	500-700 gal. spill because operator error during filling
McDonalds	10/2/2007	Grease	200 gal. grease released into street & sewer during a transfer from McDonalds to truck
Transport Station Carson Rd.	3/19/2008	Sewage	200 gal. of sewage release when truck backed over cleanout station and pump came on.
Fallon Water Treatment Plan	8/23/2010	Hydrochloric Acid	1000 gal released from storage tank into chemical storage room
Fallon Water Treatment Plan	8/31/2010	Hydrochloric Acid	330 gal released from spill during off-loading.
I-95 3.2 miles south of Interstate 80	9/14/2010	Diesel	80 gal released when trucker hit a Rail Road train safety station arm. Saddle tank was breached releasing ~80 gallons to the soil at the side of the road.
Injection Well #21-2, Desert Peak II facility, appx 118°57'30 E 39°47'30 N	4/27/2011	Diesel	100 gal Diesel-powered pump used to pump water from injection well to test well leaked diesel from temporary fuel tank.
Salt Wells Geothermal Plant, tube and shell heat exchanger	9/7/2011	Isobutene	4,000 gal Defective tube ruptured during service disruption.
Rawhide Mine	11/24/2011	Mercury	20-30 gal too much flow volume to the carbon vessel during startup resulted in a small release of mercury impacted water.
Well 267 at Freeman Lane and Stillwater Road	12/14/2011	Geothermal Water	100 gal Frozen gauge on pipe gauge port. Crack on the pipe gave way and released water from the injection well.
NAS Fallon	2/23/2012	GBU-16	2,000 lbs. GBU-16 type bomb fell off the test range and detonated
NAS Fallon	2/24/2012	JP-8	1,000 lbs. F-18 Fighter went down on Bureau of Reclamation land. NAS Fallon Environmental staff will update NDEP when an accurate
Churchill County Moody Lane Lift Station	7/14/2012	Raw Sewage	200 gal Air relief valve stuck open and released sewage to the surrounding area.
Corner of house in front yard	7/26/2012	Raw Sewage	150 gal Sewer system is not being maintained and the clogged cleanouts are causing raw sewage releases on property.
1599 Lucas Road, Fallon NV 171 Rockwood Place, Fallon, NV	8/23/2012	Oil, diesel, grease, sewage	Owner of A1 Septic dumping pumped out sewage in goats pens at his residence; at rental property, dumping diesel, oil, grease in tank --2 mon. ago, tank leaked ~1000 gal to soil - McCarter brought tractor and covered with soil. Domestic well~100 feet away
Kennametal Inc. 1077 Lovelock Highway	9/2/2012	Sulfuric Acid	Called reported 6500 gal. of sulfuric acid released from a tank due to a pipe break in the tank. A leak also occurred in the double containment releasing acid onto the ground.

Table 5-12: Hazardous Material Release in Churchill County

Location	Date	Substance	Description
			1300 gal. remained in the containment area. Remaining product released to soil.
Brady Power Plant, 10750 I-80 East, Exit 65, Fallon, NV 89406	9/18/2012	Mineral Oil	320 gal Transformer oil holding tank is corroded and dripping oil to the ground surface.
SR 839 Near Churchill/Mineral County Line (NHP stated Churchill 0) (A&K stated mile marker 76)	10/3/2012	Used Oil and Diesel	~ 70 gal mixed oil, 100-150 gal diesel Rollover accident, front tank holding diesel and rear tank holding mixed used oil ruptured.
NAS Fallon	11/20/2012	Fecal Coliform	25,000 gal Chlorine pump malfunction.
NAS Fallon	4/11/2013	JP-8	300 gal Aircraft fuel drop tank ruptured, release to concrete. Rain event occurring at time, spill entered concrete lined drainage ditch. Lined drainage ditch empties to unlined drainage ditch. No sheen observed at unlined section.
NAS Fallon	2/5/2013	Fully Exploded Bomb	1500 lb. bomb fully detonated off range on BLM Land.
Patua Geothermal Site, Drill Location 7820	4/29/2013	Geothermal Groundwater	10,000 – 15,000 gal Piping in section 21 failed and released geothermal groundwater to the surrounding area.
Patua Project, LLC North of Hazen off of Patua Road	5/20/2013	Geothermal Brine Fluid	1500 gal; 8000 gal Temporary pipeline failure (couplings failed) occurred several times in one day, releasing geothermal brine to the surrounding soil.
NAS Fallon	11/19/2014	F24-Jet Fuel	56 gal Overfill valve failure led to fuel release from tanker truck.
22211 Bango Road, Railspur B	7/24/2013	HT 110 Oil	170 gal Railcar was overfilled during loading. Oil impacted the track ballast, surrounding soil and underlying soil.
Kennametal, Inc. North Plant, 10777 North Lovelock Highway, hill adjacent to the acid tanks	9/4/2013	Sulfuric Acid	350 gal Sulfuric acid pipeline developed a small hole, which lead to a release to the surrounding area.
Churchill County WWTP	11/10/2013	Sewage	200 gal Flow was emanating from manhole on Dallas Dr., investigation indicated that roots were blocking the sewer lateral blocking flow.
Interstate 80 westbound at Mile Marker 59, north shoulder	11/12/2013	Diesel	40 gal Single vehicle accident at the above location caused a rupture in the saddle tank and a release to the surrounding area.
Bango Oil Refining	6/24/2014	Oil and Water Mixture	100 gal Clogged valve caused a release of oil and water mixture from the heat exchanger at the above location during cleaning.
Terra-Gen Dixie Valley Geothermal Plant	7/21/2014	Lubricating Oil	400 gal Binary expander hose failed, causing a release to the surrounding soil.
Bango Oil Rail Spur, B Line	9/5/2014	Lube Oil, 100W	200 gal Overflow occurred while loading a tank car with processed 100W lube oil. Estimated 200 gallons released

Table 5-12: Hazardous Material Release in Churchill County

Location	Date	Substance	Description
			to ballast and track area.

5.2.5.3 Location, Extent, and Probability of Future Events

The Nevada Department of Public Safety shows 133 facilities that are permitted to handle hazardous waste within the County all but 10 are listed in the City of Fallon; and none are active and/or archived Superfund sites. The larger fixed facilities that pose a higher risk to the County and City include the Water Treatment Plants for Churchill and the City of Fallon, the Oil Refinery, the Western Nevada Rail Park and the Asphalt Batch Plants. While several of the small, fixed facilities (e.g., body shops) have varying uses of hazardous chemicals, in general these facilities do not pose a significant risk to the County, the City and the FPST. The Naval Air Station at Fallon historically shows releases of fuel.

In addition to fixed facilities, hazardous material events have the potential to occur along U.S. 50, Interstate 80 and U.S. 95. The trucks that use these transportation arteries commonly carry a variety of hazardous materials including gasoline, other crude oil derivatives, and other chemicals known to cause human health problems.

Comprehensive information on the probability and magnitude of hazardous material events from all types of sources (such as fixed facilities or transport vehicles) is not available. Wide variations among the characteristics of hazardous material sources and among the materials themselves make such an evaluation difficult. While it is beyond the scope of this MJHMP to evaluate the probability and magnitude of hazardous material events in the County in detail, it is possible to determine the exposure of population, buildings, and critical facilities should such an event occur. Areas at risk for hazardous material events include any area within a 1-mile radius of U.S. 50, Interstate 80 and U.S. 95 and EHS fixed facilities, which are within the City of Fallon area, see Appendix B, Figure B-8 & B-9.

5.2.6 Infestation

Planning Significance – Churchill County – Low

City of Fallon – Low

Fallon Paiute-Shoshone Tribe - Low

5.2.6.1 Nature

An "invasive species" is defined as a species that is:

- 1) Non-native (or alien) to the ecosystem under consideration and
- 2) Whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Invasive species can be plants, animals (including aquatic species) and other organisms (e.g., microbes). Source: United States Dept. of Agriculture, National Agriculture Library (10/5/2007)

Infestations impact Nevada's economy through the destruction of crops and natural resources, which also impacts tourism. Some of the plant infestations are highly flammable and assist in the spread of wildfires. Human actions are the primary means of introduction and spread of invasive species.

5.2.6.2 History

The following noxious weeds currently can be found in Churchill County; Yellow Starthistle – *Centaurea solstitialis* and Diffuse Knapweed – *Centaurea diffusa*, Russian Knapweed – *Acroptilon repens*, and Perennial Pepperweed – *Lepidium latifolium*. However, this may change in the near future and therefore all noxious weeds are listed below. This information was found in the Enhanced Nevada State Hazard Mitigation Plan.

The Nevada Department of Agriculture monitors the introduction and spread of noxious weeds in the state. They have developed a categorization scheme for control of noxious weeds with Category "C" being the most widespread and subject to active eradication. Below is the Nevada Department of Agriculture's Nevada Noxious Weed List as designated by application of NRS 555.

NEVADA NOXIOUS WEED LIST

NRS 555.130 Designation of noxious weeds. The State Quarantine Officer may declare by regulation the weeds of the state that are noxious weeds, but a weed must not be designated as noxious which is already introduced and established in the State to such an extent as to make its control or eradication impracticable in the judgment of the State Quarantine Officer.

While not required by the DMA 2000, an important component of a hazard mitigation plan is a review of the County's, City's and FPST's resources to identify, evaluate, and enhance the capacity of those resources to mitigate the effects of hazards. This section evaluates the County's, City's and FPST's resources in three areas—legal and regulatory, administrative and technical, and financial—and assesses capabilities to implement current and future hazard mitigation actions.

7.1 LEGAL AND REGULATORY CAPABILITIES

The County and City currently supports hazard mitigation through its regulations, plans, and programs. The County's Building Code outlines hazard mitigation-related ordinances. Additionally, the County Master Plan identifies goals, objectives, and actions for natural hazards, including floods, drought, and earthquakes. In addition to policies and regulations, the County carries out hazard mitigation activities by participating in the National Flood Insurance Program (NFIP) see section 7.4.1.

The following table, Table 7-1, summarizes the County's, City's and FPST's hazard mitigation legal and regulatory capabilities.

Table 7-1. Legal and Regulatory Resources Available for Hazard Mitigation

Regulatory Tool	Title	Effect on Hazard Mitigation
Plans	County Master Plan	Updated 2015. Lists goals for coordination, neighborhood design, public awareness, floodplain & hazard area development, and geologic hazards to guide land use planning.
	Carson River Regional Floodplain Management Plan	Provides flood identification and habitat remediation.
	Carson River Geographic Response Plan	The plan was developed to protect the health, safety, environment and property from the effects of hazardous materials incidents in or near Carson River.
	Carson River Watershed Regional Floodplain Management Plan	2008 plan provides strategies for floodplain management that can be applied regionally & locally.
	Economic Development Plan	Business Development
	Community Wildfire Protection Plan	Provides Wildfire hazards. Enables the County to mitigate fuel loads.
	Hazmat Plan	2010 Provides emergency response to reduce impact of HAZMAT spill.
	Churchill Emergency Operations Plan	2011 Provide directives to reduce future hazard impact
	City of Fallon Emergency Operations Plan	Provide directives to reduce future hazard impact
	Banner Churchill Community Hospital Emergency Operations Plan	This plan provides health directives.
	Lahontan Dam Table Top Flood Exercise	2009 exercise document provides a review of reduction in loss of life and minimize property damage.
	Churchill County School District	Emergency Operations Plan
	Western Nevada College	WNC Policy Manual Chapters 10 & 11

Table 7-1. Legal and Regulatory Resources Available for Hazard Mitigation

Regulatory Tool	Title	Effect on Hazard Mitigation
Programs Ordinances and Policies	National Flood Insurance Program	Churchill County & City of Fallon adopts and enforces a floodplain management ordinance to reduce future flood damage. In exchange, the NFIP makes Federally backed flood insurance available to homeowners, renters, and business owners
	Building Code (IBC 2006) County & City	Master Plan, Land Use Plan Element, Building, Fire and Zoning codes and ordinances. Provides regulations to reduce hazard impact.
	Fire Code County & City	
	Zoning Ordinances	
	Special purpose ordinances	Floodplain management, storm water management, wildfire ordinances, hazard set back requirements

7.2 ADMINISTRATIVE AND TECHNICAL CAPABILITIES

The administrative and technical capability assessment identifies the staff and personnel resources available within the County & City to engage in mitigation planning and carry out mitigation projects. The administrative and technical capabilities of the County and City are listed in Table 7-2.

Table 7-2. Administrative and Technical Resources for Hazard Mitigation

Staff/Personnel Resources	Department / Agency
County	
Planner(s) or engineer(s) with knowledge of land development and land management practices	Building & Planning
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Building
Planner(s) or engineer(s) with an understanding of manmade or natural hazards	Building, Planning, Fire Dept.
Staff with education or expertise to assess the community's vulnerability to hazards	Building, Fire, Emergency Manager
Floodplain manager	Planning
Personnel skilled in GIS and/or HAZUS-MH	Planning
Scientist familiar with the hazards of the community	UNR, Bureau of Mines & Geology for Earthquakes
Emergency Services	Fire Department, Emergency Management, Sheriff
Finance (purchasing) – Fiscal Management	Comptroller
Public Information Officers, Planner(s)	Sheriff's Office, Fire Dept, Executive Staff
City of Fallon	
Planner(s) or engineer(s) with knowledge of land development and land management practices	Building, Planning & Public Works
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Building & Public Works
Planner(s) or engineer(s) with an understanding of manmade	Building, Planning, Fire Dept., Emergency Mgmt., Police Dept.

EXHIBIT 7

SANDIA NATIONAL LABORATORIES LITHIUM-ION BATTERY THERMAL-RUNAWAY, CHEMISTRY, STATE-OF-CHARGE AND FAILURE-PROPAGATION EVIDENCE

Technical Evidence Relevant to Ground V - ZC26-2

Purpose. This exhibit supports Ground V's limited proposition that "destructive battery testing," standing alone, does not establish a single hazard or emergency-response profile. Sandia research demonstrates that lithium-ion thermal behavior can vary with cathode chemistry, state of charge (SOC), stored/specific energy, cell capacity/form factor, and multi-cell geometry and thermal/electrical interaction.

Part A - Sandia Energy Storage Safety R&D; Data Repository. Repository pages are included to document Sandia's public research-data source and its connection to the thermal-runaway research reproduced here.

Part B - Barkholtz et al. (Sandia), Multi-scale thermal stability study of commercial lithium-ion batteries as a function of cathode chemistry and state-of-charge. Complete Sandia manuscript. It directly compares LCO, LFP and NCA commercial cells at different SOC's. The authors report that whole-cell thermal-runaway onset temperature decreased and peak heating rate increased with SOC, and that the tested chemistries exhibited materially different thermal-runaway behavior.

Part C - Lamb et al. (2021), Investigating the Role of Energy Density in Thermal Runaway of Lithium-Ion Batteries with Accelerating Rate Calorimetry. Complete open-access article. It evaluates chemistry, SOC, cell capacity and energy density and addresses stored energy, heat release, heating rate, smoke/fire/particulate ejecta and propagation considerations.

Part D - Lamb et al. (Sandia), Failure Propagation in Multi-Cell Lithium Ion Batteries. Complete article. Sandia induced thermal runaway using mechanical nail penetration and examined propagation through multi-cell modules. The results demonstrate that module configuration and thermal/electrical interactions can materially affect failure propagation.

Ground V use and limitation. These studies are not offered to establish what battery chemistry, SOC, cell/module/pack size, storage quantity, test method or failure trigger Rivian will use, and they do not predict that ZC26-2 will experience thermal runaway. They support the narrower evidentiary point that those characteristics can affect the hazards and response demands reasonably associated with battery testing. Without sufficient project-specific information, the relevance and scale of those considerations cannot be determined from the phrase "destructive battery testing" alone.

Highlighting. Yellow highlighting is a navigation aid only. Complete technical papers are included so highlighted propositions can be evaluated in their original context.

R&D Data Repository

This page holds a collection of public data to support a broad-based research effort toward the advancement of energy storage. To have data added here, send a request to dsokolo@sandia.gov .

Acceptable file formats include .csv, .xls, or .xlsx. Methods for large file transfer are available as needed.

"Characterization of Cycle-Aged Commercial NMC and NCA Lithium-ion Cells: I. Temperature-Dependent Degradation"

Name	Type	Download Link	Citation
Raw Data for Temperature-Dependent Degradation of 18650 Li-ion Cells	Raw Data	Rawdata Tempbased characterization  [1.88GB download]	R. Wittman et al. J. Electrochem. Soc. 170 120538 DOI: 10.1149/1945-7111/ad1450 

"Investigating the Role of Energy Density in Thermal Runaway of Lithium-Ion Batteries with Accelerating Rate Calorimetry"

Name	Type	Download Link	Citation
Sandia – ARC	Raw	README ARC	J. Lamb et al.
Data of Cells at Different States of Charge	Data	Data 	J. Electrochem.
		16Ah LMO	Soc.
		Graphite ARC	168 060516
		Data Multiple	DOI:
		SOCs 	10.1149/1945-7111/ac0699 

"Thermodynamic Reaction Heat Calculator for Layered Metal Oxide Cathodes in Organic Electrolytes"

Name	Type	Download Link	Citation
Cathode Reaction Heats	Calculator	Thermodynamic Web Calculator	R.C. Shurtz and J.C. Hewson
			J. Electrochem. Soc.
			2020, 167, 090543
			DOI:
			10.1149/1945-7111/ab8fd9 

"Open Data, Models, and Codes for Vanadium Redox Batch Cell Systems: A Systems Approach using Zero-Dimensional Models"

Name	Type	Download Link	Citation
Sandia Cell – Vanadium Redox Flow	Raw Data	README VRFB Data 	S.B. Lee et al.
			J. Electrochem. En. Conv. Stor.

Multi-scale thermal stability study of commercial lithium-ion batteries as a function of cathode chemistry and state-of-charge

Heather M. Barkholtz^a, Yuliya Preger^a, Sergei Ivanov^b, Jill Langendorf^c, Loraine Torres-Castro^c, Joshua Lamb^c, Babu Chalamala^a, and Summer R. Ferreira^{c,*}

^a Energy Storage Technology and Systems, Sandia National Laboratories, 1515 Eubank Blvd SE, Albuquerque, NM, USA

^b Center for Integrated Nanotechnologies, Los Alamos National Laboratory, Los Alamos, NM, USA

^c Advanced Power Sources R&D, Sandia National Laboratories, 1515 Eubank Blvd SE, Albuquerque, NM, USA

Abstract:

This paper takes a critical look at the materials aspects of thermal runaway of lithium-ion batteries and correlates contributions from individual cell components to thermal runaway trends. An accelerating rate calorimeter (ARC) was used to evaluate commercial lithium-ion cells based on LiCoO_2 (LCO), LiFePO_4 (LFP), and $\text{LiNi}_x\text{Co}_y\text{Al}_{1-x-y}\text{O}_2$ (NCA) at various states of charge (SOC). Cells were disassembled and the component properties were evaluated by thermogravimetric analysis (TGA), differential scanning calorimetry (DSC), and temperature-resolved X-ray diffraction (TR-XRD).

The whole cell thermal runaway onset temperature decreases and peak heating rate increases with SOC due to cathode destabilization. LCO and NCA cathodes are metastable, with NCA cells exhibiting the highest thermal runaway rates. By contrast, the LFP cathode is stable to $> 500^\circ\text{C}$, even when charged. For anodes, the decomposition and whole cell self-heating onset temperature is generally independent of SOC. DSC exotherm onset temperatures of the anodes were generally within 10°C of the onset of self-heating in whole cell ARC. However, onset temperatures of the cathodes were typically observed above the ARC onset of whole cell runaway. This systematic evaluation of component to whole cell degradation provides a scientific basis for future thermal modeling and design of safer cells.

Keywords:

Calorimetry, Thermal runaway, Lithium-ion, Thermogravimetric analysis, Temperature-resolved X-ray diffraction

1. Introduction:

High cell voltage and energy density, long lifetime, and reliability have made rechargeable lithium-ion batteries (LIB) the technology of choice for consumer electronics and electric vehicles. They

are beginning to find wide-spread use in grid-tied stationary storage systems.¹⁻² However, with increasing energy and power density come heightened risks of thermal runaway or a serious fire.^{3- 10} Incidents of smoke or fire caused by abuses or failure under normal conditions are still an unresolved hurdle to widespread adoption of lithium-ion batteries in grid energy storage applications. A variety of parameters such as cell chemistry and state-of-charge (SOC) can impact thermal runaway characteristics. For the successful implementation and commercial operation of utility class energy storage plants, component level thermal stability as a function of chemistry and SOC should be understood and related to whole cell phenomena. Understanding cell-level phenomena is a critical foundation for larger-scale thermal failure propagation studies.

The lithium battery industry mainly uses layered transition metal oxides such as LiCoO_2 (LCO) and $\text{LiNi}_x\text{Co}_y\text{Al}_{1-x-y}\text{O}_2$ (NCA) as cathode materials where power and performance are a key requirement, and LiFePO_4 (LFP), an olivine phosphate, where stability and long cycle life are of paramount importance. On the anode side, graphite or other forms of carbon are the most common materials. There have been numerous reports on the thermal stability of various cell components by thermogravimetric analysis (TGA),¹¹⁻¹³ X-ray diffraction (XRD),^{14- 18} and calorimetry.^{19- 26} However, these studies may not represent cycled commercial LIB materials as they were not harvested from commercial cells. Additionally, testing conditions and techniques vary by group and publication, making comparative studies across the literature challenging. Of the few studies available on commercial LIBs, most are limited to whole cell accelerated rate calorimetry (ARC) data without component analysis.²⁷⁻²⁹ Recent studies of commercial cells incorporated component level characterization, but not across a broad range of SOC or using consistent cell geometries.³⁰⁻³¹ A deeper understanding of commercial cell thermal runaway is required to develop failure mitigation strategies and to design inherently safe energy storage. As such, a multi-scale systematic study of commercial LIBs of several chemistries and SOC is important. In this work, we employed various methods to investigate the correlation between intrinsic properties of cell components and the thermal stability of whole commercial cells under similar test conditions. Three popular commercial 18650 Li-ion cells with LFP, LCO, and NCA cathodes were purchased from well-known manufacturers. The cells were studied at the whole cell and component level. Relationships between component chemistry, thermal stability, SOC, and thermal runaway behavior will be outlined. By better understanding thermal runaway in commercial cells under systematically varied conditions, the cascade and outcomes of thermal events may be better predicted. This may facilitate a more data-informed development of LIBs and systems that are lower risk and the development and adoption of more robust failure mitigation strategies.

2. Experimental:

2.1. Cell and Electrode Preparation:

The 18650 format LIB were commercially sourced: LCO was purchased from LG Chem, LFP was obtained from A123 Systems, and NCA was sourced from Panasonic (**Table S1**). The SOC was defined by dividing charging capacity by the average capacity at 100% SOC from three charge/discharge cycles of a pristine cell at C/4 rate at room temperature (a rate of 1C corresponds to the current that will discharge the full capacity of a battery in one hour). The cell was then charged at C/4 to the desired capacity. 100% SOC is defined as the capacity obtained with a 0.5A constant current charge with 10% charge rate taper to the maximum manufacturer-specified charging voltage.

Cell disassembly took place within an Ar filled glove box. The external label and metal 18650 can were removed to yield the electrode jellyroll. Anode, cathode, and separator were parted and samples of each were reserved for future characterization. The manufacturer specification for the cells indicate an organic electrolyte, which is expected to be a mixture of ethylene carbonate and dimethyl carbonate with LiPF_6 salt. In one instance, a disassembled electrode was washed with dimethyl carbonate prior to analysis.

2.2. Accelerating Rate Calorimetry:

ARC testing was performed on the 18650 cells (LFP, LCO, and NCA) at 0, 50, 75, and 100% SOC. The ARC was operated in heat-wait-seek mode to determine the onset of self-heating. In this mode, the ARC increases temperature in discrete steps, waits for the thermal transients to decay, and then monitors the temperature of the cell for a fixed time. If the cell temperature does not increase above a threshold value, the ARC repeats heat-wait-seek. If an exotherm is detected, the ARC measures temperature in an adiabatic state. Once a threshold temperature is reached, the test is ended and the cell cools. ARC experiments represent a thermal abuse environment that includes moderately high temperatures for long periods of time.

ARC data was acquired for LCO at 0% SOC and LFP cells at all SOC using a Thermal Hazard Technology ES-ARC (manufacturer-designated abbreviation). Prior to measurements, a high-pressure test at > 800 psi was performed to verify that the system is leak-tight. Plastic insulating labels were removed from 18650 cells prior to being loaded in the ARC. Cells were confined within a snug metal cell holder attached to a pressure transducer. The bomb thermocouple was attached with a copper mesh to the side of the cell holder in two positions. Immediately prior to measurement an additional low-pressure test to ~ 50 psi was performed to once again ensure the system is leak-tight. ARC testing was performed from

30-450 °C with 0.020 °C min⁻¹ slope sensitivity. In the heat-wait-see procedure, heating was performed in 5 °C steps with a 30-minute wait time. For ARC calculations, the sample heat capacity is defined as 0.95 J g⁻¹ K⁻¹ (masses given in **Table S1**) and the test cell heat capacity is 0.5 J g⁻¹ K⁻¹ (mass of 106 g).

ARC data was acquired for the more energetic LCO and NCA cells using a Thermal Hazard Technology Expanded Volume ARC (EV-ARC). Testing was performed from 50-405 °C with a 0.020 °C min⁻¹ slope sensitivity. Heating was performed in 5 °C steps with a 30-minute wait period. 5 °C steps offer a convenient time-scale at which to carry out ARC experiments while not missing the onset of key thermal events. The 30-minute wait period is intended to provide enough time for the temperature to reach a steady state and to determine if there is self-heating. For calculations, the sample heat capacity is again defined as 0.95 J g⁻¹ K⁻¹, but no test cell is used in the EV-ARC. **Figure S1** offers a comparison of the two ARCs.

2.3. Thermogravimetric Analysis/Differential Scanning Calorimetry:

Simultaneous thermogravimetric analysis/differential scanning calorimetry (TGA/DSC) allows for simultaneous quantification of mass change (TGA) and the corresponding enthalpy response (DSC) to changes in temperature. TGA/DSC is used to evaluate materials decomposition in response to thermal abuse conditions. The data was acquired on the simultaneous TGA/DSC instrument Netzsch STA 449 F1 under N₂ flow (150 mL min⁻¹) at a heating rate of 15 °C min⁻¹ (unless specified otherwise). Samples were prepared in the glove box by placing approximately 10-15 mg of powder removed from the current collector, without any drying or washing, into an alumina crucible with a lid. The crucibles were not sealed to avoid pressurization during measurement. The crucible was then placed in an Ar-filled container and transferred out of the glove box. Crucibles were removed from the container immediately prior to the TGA/DSC measurement. The DSC data were not corrected for any baseline shift. The onset temperature was determined by the automatic procedure in the Netzsch Proteus Thermal Analysis v6.1 package at the intersection of the extrapolated baseline and the tangent line passing through the inflection point on the face side of the exotherm peak. Due to the sharpness of the peaks, the application of more rigorous baseline correction would likely not change the onset.

2.4. Temperature-Resolved X-Ray Diffraction:

Temperature-resolved X-ray diffraction (TR-XRD) was carried out on a Rigaku SmartLab II XRD with a HT 1500 high temperature attachment in Parallel Beam Configuration with a graphite monochromator. Electrode materials were scraped off the current collector and powders were placed on an alumina substrate and heated at 15 °C min⁻¹ under ~10⁻² Torr vacuum to a specified temperature. X-ray diffractograms were recorded after a 10-minute temperature stabilization period for each

temperature point. This process was repeated until all temperature points were sampled (in the range of 25-200 °C for anode materials and 25-600 °C for cathode materials). Electrode samples were collected from the LFP, LCO, and NCA cells at 0 and 100% SOC. The samples were kept in an inert environment until being placed into the high temperature chamber and evacuated.

Unlike the other samples, the LFP cathode powder was analyzed on a zero-background silicon substrate to avoid overlap between Al_2O_3 peaks in the previous substrate and possible Fe_2O_3 peaks in the cathode material. The sample was heated at a rate of $20\text{ }^\circ\text{C min}^{-1}$ followed by a 30-minute equilibration time before each measurement. The equilibration time was longer for this sample given the greater gap between the temperatures at which each measurement was completed.

3. Results and Discussion:

For the cathode chemistries studied, the operating voltage is highest for NCA, slightly lower for LCO, and notably lower for LFP at all SOC. The typical voltage profiles of LCO, LFP, and NCA cells as a function of SOC are shown in **Figure S2**. Note that both NCA and LCO have an SOC-dependent rise in the voltage with no plateau, while LFP has a very different profile, with a very wide plateau from 10-90% SOC.

Whole cell failure from the three cell chemistries using ARC shows a range of heat release rates of five orders of magnitude across chemistries. For each chemistry, ARC data was taken at 0, 50, 75, and 100% SOC. Semi-log plots of the ARC self-heating rate profiles are shown as a function of temperature and SOC in **Figure 1**. (The same information is also displayed with linear axes in **Figure S3**.) Qualitatively, a parallel is seen between how flat the plateau, or small the voltage change, is in the normal voltage profile from **Figure S2** and how small the variation in heating rate is as a function of SOC within a given chemistry. A cell's first detectable exothermic event ($> 0.02\text{ }^\circ\text{C min}^{-1}$ rate) is given as the onset temperature of self-heating (T_{onset}) in **Table 1**. Due to the extreme temperatures of some cells thermal runaway behavior, two different ARCs were used. The ES-ARC was used for lower energy cells (LFPs and LCO at low SOC) and captured pressure data simultaneously. The EV-ARC does not capture pressure data and was used for more energetic failures (LCOs at high SOC and NCAs). Cathode decay energetics can be estimated from the maximum heating rate in the ARC. Therefore, the maximum heating rate (HR_{max}), nominal capacity normalized maximum heating rate ($\text{HR}_{\text{max,nominal}}$), fractional capacity normalized maximum heating rate ($\text{HR}_{\text{max,fraction}}$), and vented gas pressure (P_{max}), when available, are recorded in **Table 1**. $\text{HR}_{\text{max,nominal}}$ was found using the nominal capacities of each cell (2.5 Ah for LCO, 1.1 Ah for LFP, and 2.9 Ah for NCA). $\text{HR}_{\text{max,fraction}}$ was found by multiplying $\text{HR}_{\text{max,nominal}}$ by the fractional SOC. Across chemistries, the $\text{HR}_{\text{max,nominal}}$ at 100% SOC varies by four orders of magnitude, with $4.1\text{ }^\circ\text{C min}^{-1}\text{ Ah}^{-1}$ in

LFP and 7410 °C min⁻¹ Ah⁻¹ in NCA. For NCA, the HR_{max,nominal} varies by four orders of magnitude from 0% to 100% SOC. LCO varies by three orders of magnitude as a function of SOC, while LFP varies by a single order of magnitude in HR_{max,nominal}. These differences in SOC dependence are significant.

Table 1. Key findings from ARC measurements of thermal runaway behavior as a function of lithium-ion battery chemistry and SOC.

Cell	SOC (%)	ARC type ^a	T _{onset} ^b (°C)	T _{exo} ^c (°C)	HR _{max} (°C min ⁻¹)	HR _{max,nominal} (°C min ⁻¹ Ah ⁻¹)	HR _{max,fraction} (°C min ⁻¹ Ah ⁻¹)	P _{max} (psi)
LCO	0	ES	105.8	298.1	18.4	7.4	---	1827.9
	50	ES	96.6	202.5	1116.9	447	894	2981.5
	75	EV	106.5	193.3	4822.3	1930	2570	---
	100	EV	106.4	168.4	6053.5	2420	2420	---
LFP	0	ES	105.9	---	0.4	0.4	---	2900.5
	50	ES	100.8	---	0.3	0.3	0.5	3041.2
	75	ES	100.7	---	0.7	0.6	0.8	3331.9
	100	ES	100.9	240.5	4.5	4.1	4.1	2912.8
NCA	0	EV	164.9	391.8	1.5	0.5	---	---
	50	EV	140.7	182.2	10810.3	3730	7460	---
	75	EV	131.7	169.4	16107.4	5550	7410	---
	100	EV	132.5	165.9	21480.4	7410	7410	---

^a An ES-ARC (manufacturer-designated abbreviation) is used for less energetic cells, has a larger adiabatic window, and can capture pressure data. An EV-ARC (extended volume) is used for more energetic cells. Images of the two ARCs are provided in Figure S1.

^bFirst detectable exothermic event/onset of self-heating (> 0.02 °C min⁻¹ change)

^cHeating rate first surpasses 1 °C min⁻¹

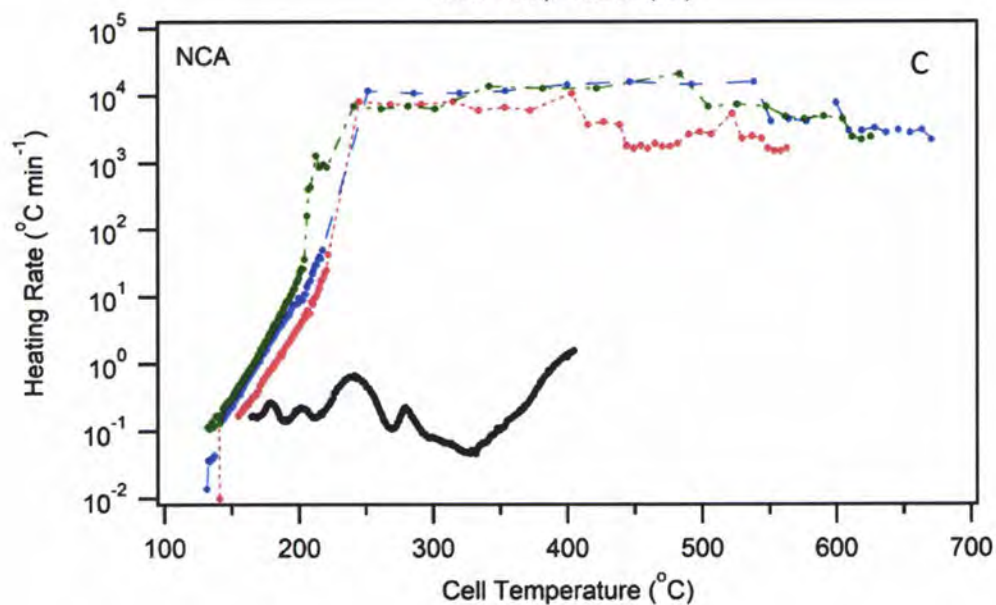
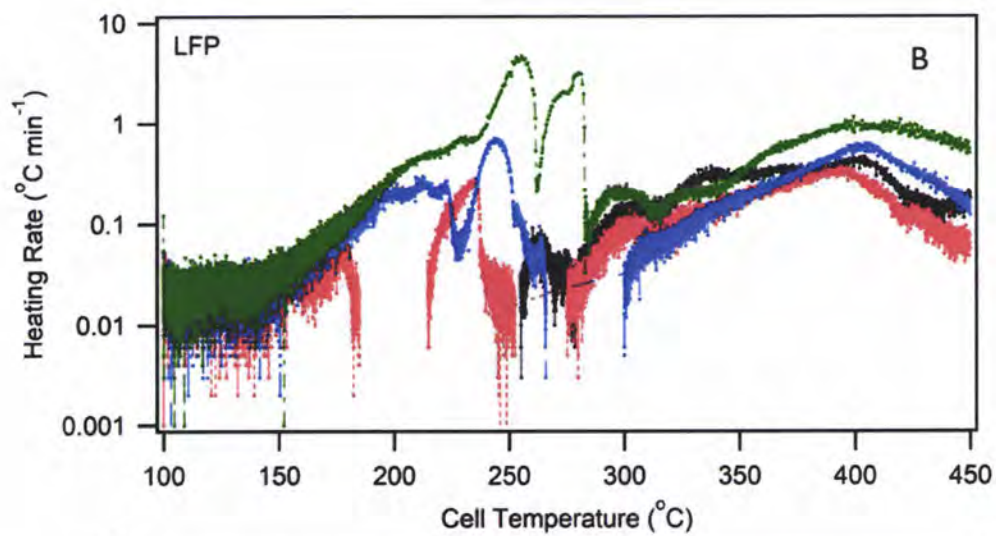
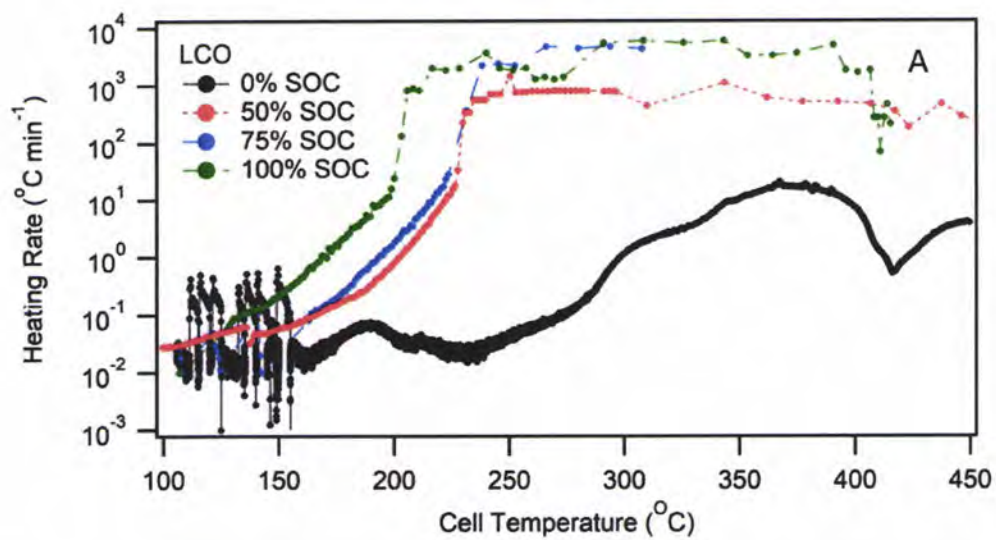


Figure 1. Log linear plot of heating rate as a function of temperature based on ARC results from (A) LCO, (B) LFP, and (C) NCA cells at 0% SOC (black, solid line), 50% SOC (red, dotted line), 75% SOC (blue, dashed line), and 100% SOC (green, dash-dot line). Circles are data points and lines are a guide to the eye.

To describe the thermal runaway process, two main steps are identified:³²⁻³³

- (1) Decomposition of the solid-electrolyte interface (SEI) together with the reaction between intercalated lithium and the electrolyte (delithiation), and
- (2) Reaction between oxygen from decomposing cathode and electrolyte

Thermal runaway is initiated via the breakdown of the SEI layer as the cell overheats.⁷ The SEI layer decomposes at relatively low temperatures, 60-130 °C, and this process is expected to manifest itself in the ARC as a self-heating event.²⁶ Once the SEI is decomposed, the electrolyte will exothermically react with exposed lithium embedded in the carbon anode. As the anode decomposition proceeds, hydrocarbon gases are released, building pressure inside the 18650 can. Around 130-170 °C, the cathode-anode separators start to melt, **Figure 2**, allowing the electrodes to short circuit.³⁴ The ARC data will demonstrate one of two patterns: either a hard (low impedance) internal short circuit from dramatic separator failure, or no hard short occurs and the ARC data would be consistent with thermochemical reaction within the cell coupled with a developing short circuit from a gradually decomposing separator. A gap between the DSC endotherm peak temperature of the separator and the temperature at which sudden high rate thermal runaway occurs in the whole cell ARC data would suggest the latter (a combination of thermochemical reaction and short circuit). This was observed for all cells in

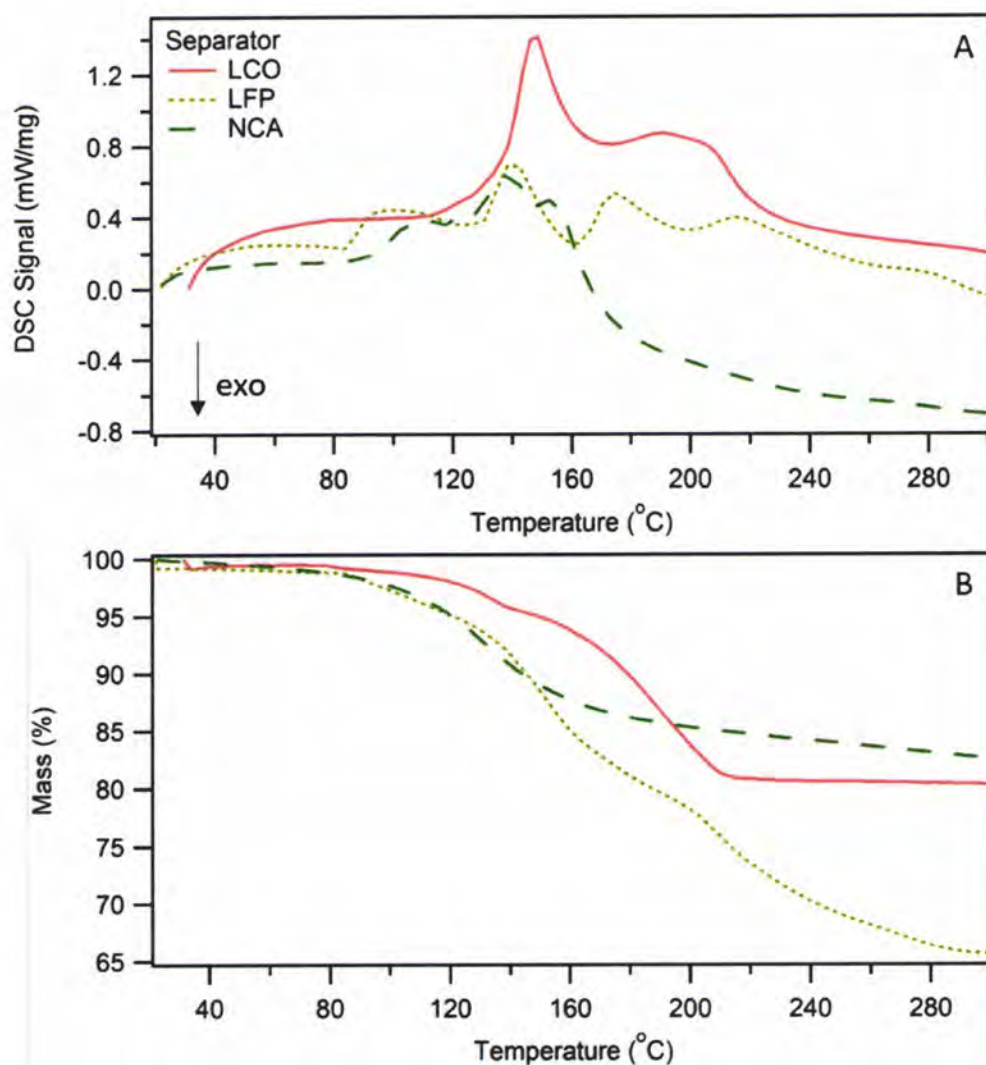


Figure 2. Separator decomposition behavior from LCO (red, solid line), LFP (yellow, dotted line), and NCA (green, dashed line) given by the (A) DSC and (B) TGA results.

Figure 1. The high runaway rates present for LCO and NCA cells exceed the capabilities of the EV-ARC to provide an adiabatic environment and result in a significant amount of noise in the runaway (**Figure S3 A/C**), limiting the amount of quantitative information that can be derived from the ARC data. Despite these limitations, the general trends provide useful information for overall evaluation of the cells. To quantify the onset of large exotherms, the temperature was recorded (T_{exo}) when the heating rate surpassed $1\text{ }^{\circ}\text{C min}^{-1}$ and is displayed in **Table 1**.

3.1. Anode Decomposition

All anodes experienced an exothermic transition with onset at 100-130 °C. The DSC response curves of all three anode materials as a function of SOC are shown in **Figure 3 A, B, and C** (Table S2-S4 list onset temperatures for all scenarios). In this temperature range, SEI decomposition and possible anode delithiation are the likely explanations. The SEI is comprised of both stable (inorganic LiF, Li₂CO₃, and Li₂O) and metastable (lithium alkyl carbonate and lithium semi-carbonate) components.^{19, 35-38} Since all anodes have metastable SEI components, the DSC shows qualitatively similar behavior. Around 100-150 °C, metastable complexes in contact with electrolyte and lithium may transform into stable SEI components, releasing small organic compounds.

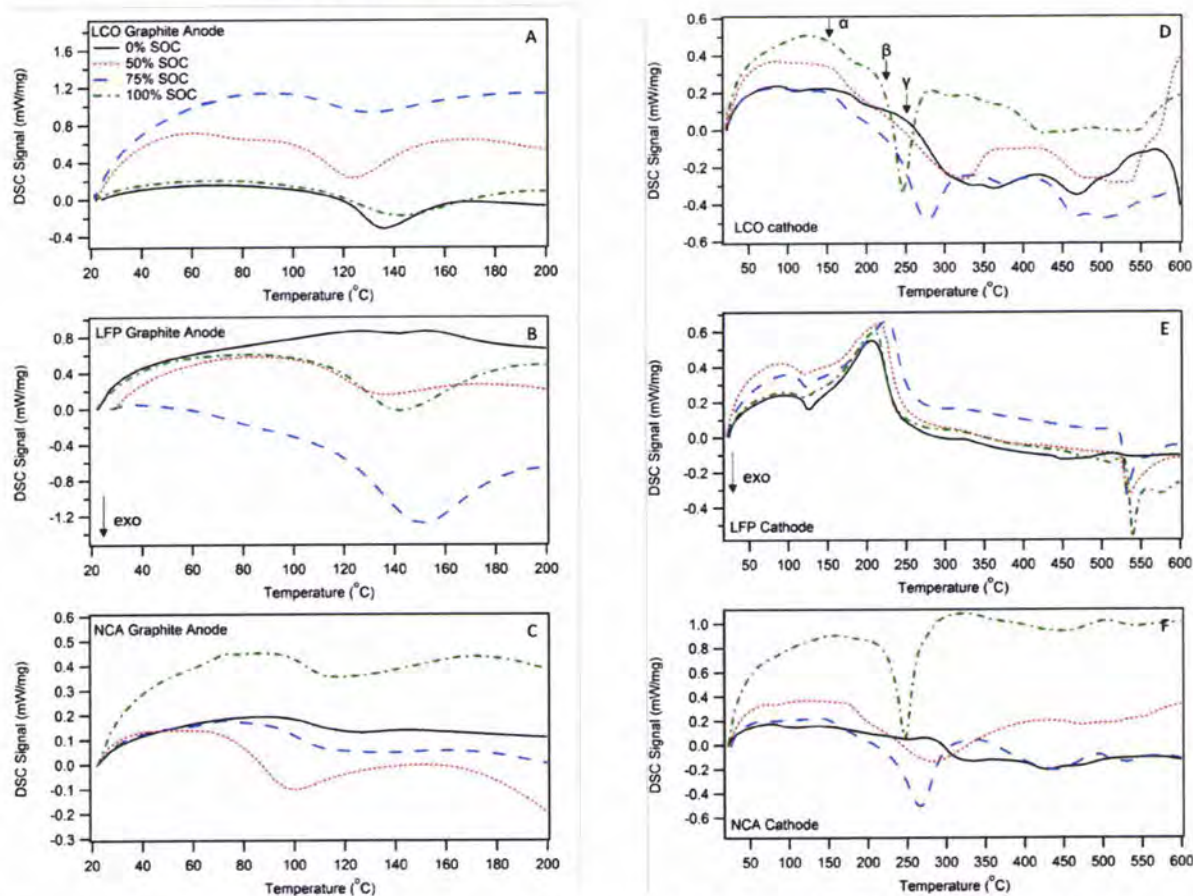


Figure 3. DSC results from (A) LCO anode, (B) LFP anode, (C) NCA anode, (D) LCO cathode, (E) LFP cathode, and (F) NCA cathode at 0% SOC (black, solid line), 50% SOC (red, dotted line), 75% SOC (blue, dashed line), and 100% SOC (green, dash-dot line).

Recent research suggests that the SEI is not static, but instead changes with cell voltage.³⁹⁻⁴² Upon charging, the SEI reversibly thickens from additional LiF, Li₂O, and other inorganic, lithium-

containing components. The impact of increasing lithium (from increasing SOC) on the mass loss during metastable SEI decomposition is two-fold:

- (1) a lesser amount of metastable SEI may be available for decomposition, resulting in a lower percentage of mass loss in the anode as a function of increasing SOC. This is evidenced by the TGA results in **Figure S4 A, B, and C.** and
- (2) the decomposition pathway may be altered by additional lithium to produce fewer gaseous products, as shown in the following equations³⁵:

original pathway: $(\text{CH}_2\text{OCO}_2\text{Li})_2 \rightarrow \text{Li}_2\text{CO}_3 + \text{C}_2\text{H}_4 + \text{CO}_2 + \frac{1}{2} \text{O}_2$ (1)

additional Li: $2\text{Li} + (\text{CH}_2\text{OCO}_2\text{Li})_2 \rightarrow 2\text{Li}_2\text{CO}_3 + \text{C}_2\text{H}_4$ (2)

By comparing DSC of a washed and unwashed anode, we show evidence of this metastable SEI contribution. A 0% SOC electrode fragment was washed with dimethyl carbonate to remove metastable SEI components and electrolyte components like LiPF_6 , which has also been shown to trigger SEI decomposition via PF_5 attack.⁴³ The exothermic peak in the resulting DSC measurement (**Figure S5A**) was significantly reduced together with the percentage of the mass loss, from 8.7% in the unwashed to 6.2% in the washed sample by 200 °C. This supports our assignment of the DSC anode exotherms to the decomposition process of metastable SEI components.

XRD of LCO, LFP, and NCA anodes indicates the presence of the same phases for all chemistries at 0% and 100% SOC. Each sample was run as a film on a copper foil current collector, without any processing after it was removed from the battery. At 0% SOC, X-ray diffractograms of all three types of anodes (LCO, LFP, and NCA) are indistinguishable and all reflections can be assigned to graphite (**Figure S6A**). The copper peaks observed in the diffractograms are from the current collector. Upon complete lithiation to 100% SOC, all three types of anodes again demonstrate the presence of the same phases – here, a combination of LiC_6 and LiC_{12} (**Figure S6B**).

Component and whole cell thermal release can be correlated to phase changes in electrodes to help understand the multiscale behavior in cell failure using TR-XRD. It can provide a roadmap of average structural changes through the process of thermal decomposition by selecting temperatures of interest from thermal behavior. TR-XRD measurements were conducted with all anode materials at 100% SOC. As a representative sample, the anode from an LCO cell at 100% SOC is shown in **Figure 4**. With temperature increase, the degree of lithiation decreases, as evident from the transition of LiC_6 into LiC_{12} and subsequently into LiC_{18} .⁴⁴ This thermal delithiation is likely due to Li diffusion with rebalancing across the graphite matrix and/or reaction with lingering electrolyte. (This phase evolution resulting in delithiation is distinct from oxidative delithiation of graphite, shown in **Figure S7**). Anode delithiation

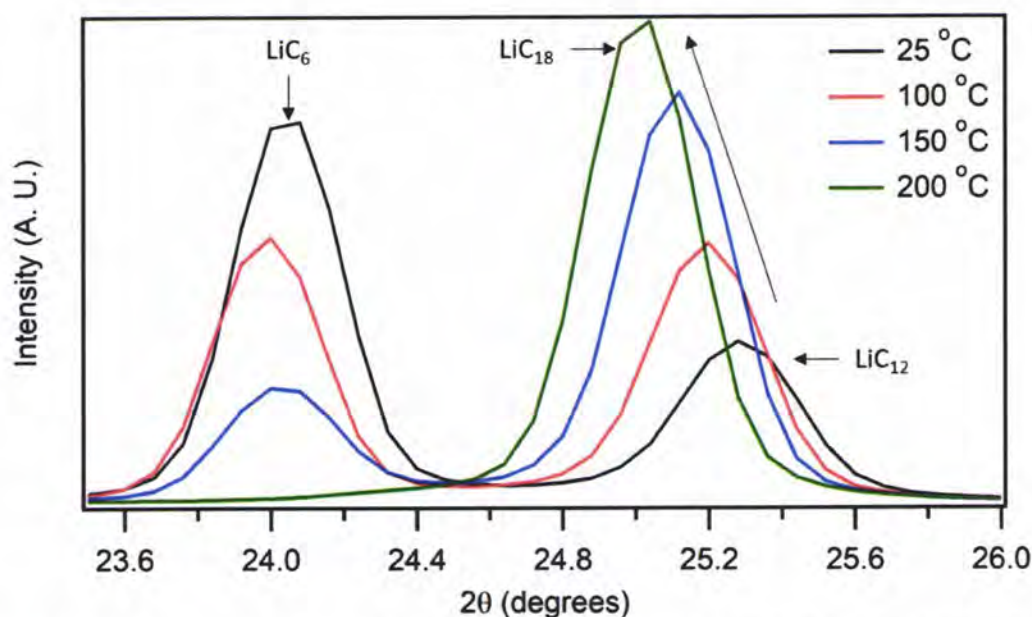


Figure 4. Temperature-resolved XRD pattern of the 100% SOC LCO anode at 25 °C (black line), 100 °C (red line), 150 °C (blue line), and 200 °C (green line).

starts around 100 °C, which corresponds to the temperature for SEI decomposition observed in DSC. As metastable SEI components convert into inorganic SEI, the process leaves underlying lithiated graphite unprotected, making these two decomposition processes intimately coupled. As mentioned previously, SEI/anode decomposition is the first event in the thermal runaway cascade. As such, the LCO SEI decomposition and anode delithiation onset temperatures correspond to the ARC T_{onset} given in **Table 1** of ~106 °C for all SOC. (Comparable TR-XRD results for LFP and NCA at 100% SOC are given in **Figure S8**.) In the LFP anode, at 100 °C, minimal decomposition is noted; however, by 150 °C all of the LiC_6 is gone in favor of $\text{LiC}_{12}/\text{LiC}_{18}$. By 200 °C, the $\text{LiC}_{12}/\text{LiC}_{18}$ has started to decompose into graphite. Similarly, by anode DSC and whole cell ARC, the LFP onset temperature is just past 100 °C (**Figure 3B** and **Table 1**). Changes in the NCA anode were similar to LCO: by 100 °C, the LiC_6 has begun decomposing into LiC_{12} , and by 200 °C, all lithiated graphite has decomposed into LiC_{18} and an unidentified phase. The NCA anode decomposition evident by TR-XRD is consistent with the NCA anode DSC onset temperature for SEI decomposition at 100% SOC (~100 °C, **Figure 3C**). However, the NCA cells exhibited an unusually high ARC T_{onset} of 133 °C (**Table 1**). One possible explanation is that SEI decomposition occurs shortly before the onset of anode decomposition, and it is the anode decomposition which provides more heat for the onset of the whole cell self-heating. If the NCA graphite anode possessed a surface area lower than that

of the other cells, the heat release would be reduced, delaying the onset of ARC self-heating.⁴⁵ It is also plausible that the whole cell onset of the different cells varies due to the presence of different electrolyte and additive mixtures; the influence of these cocktails would not have been captured in DSC evaluations of the extracted anodes. (Tables S2-4 provide a summary of onset temperatures across the different characterization techniques for all cell types and SOC.)

3.2. Cathode Decomposition

The second major step in the chemical thermal runaway process is the reaction between oxygen from the decomposing cathode and the electrolyte. The onset of this reaction can be detected on the ARC by a large increase in self-heating. The exothermic cathode decomposition is responsible for the peak observed in the ARC data, $HR_{\text{max,nominal}}$ and $HR_{\text{max,fraction}}$ (Table 1). DSC heat flow plots from all three cathode materials as a function of SOC are shown in Figure 3 D, E, and F. As before, DSC measurements were performed on the disassembled electrode materials without any treatment. From ARC measurements, LFP generates minimal thermal runaway. LFP cells with SOC below 100% do not cross the $1\text{ }^{\circ}\text{C min}^{-1}$ threshold, though the temperatures still ultimately rise to over $400\text{ }^{\circ}\text{C}$. The DSC (Figure 3E) shows a single endothermic peak centered around $200\text{ }^{\circ}\text{C}$ for all LFP cathode materials (corresponding TGA is shown in Figure S4E). This peak is likely related to LiPF_6 and/or electrolyte decomposition, as the endotherm and mass loss are consistent across SOC.⁴⁶ Such electrolyte decomposition likely occurs in LCO and NCA samples as well, although it is masked by an overlapping and overwhelming exotherm from the cathode. Previous DSC reports have suggested that LFP cathodes exhibit an exotherm at $250\text{--}300\text{ }^{\circ}\text{C}$,³¹ however, that peak is likely due to residual organic solvent on the electrode. Studies where the LFP cathode was washed indicated no peaks up to $350\text{ }^{\circ}\text{C}$.^{30,47} In the present study, the LFP cathode TGA-DSC measurements indicate substantial decomposition around $500\text{--}550\text{ }^{\circ}\text{C}$, with an exothermic peak and mass loss that increase in intensity with SOC. Temperature-resolved XRD confirms this cathode behavior, as shown in previous studies and Figure 5.⁴⁸⁻⁵⁰ The Li_xFePO_4 material is stable until $300\text{ }^{\circ}\text{C}$, but by $550\text{ }^{\circ}\text{C}$, the cathode has largely decomposed to $\text{Fe}_2\text{P}_2\text{O}_7$ and $\text{Fe}_7(\text{PO}_4)_6$. Due to the stability of the LiFePO_4 cathode, the major peak observed in Figure 1B ARC data is likely from anode and electrolyte decomposition.

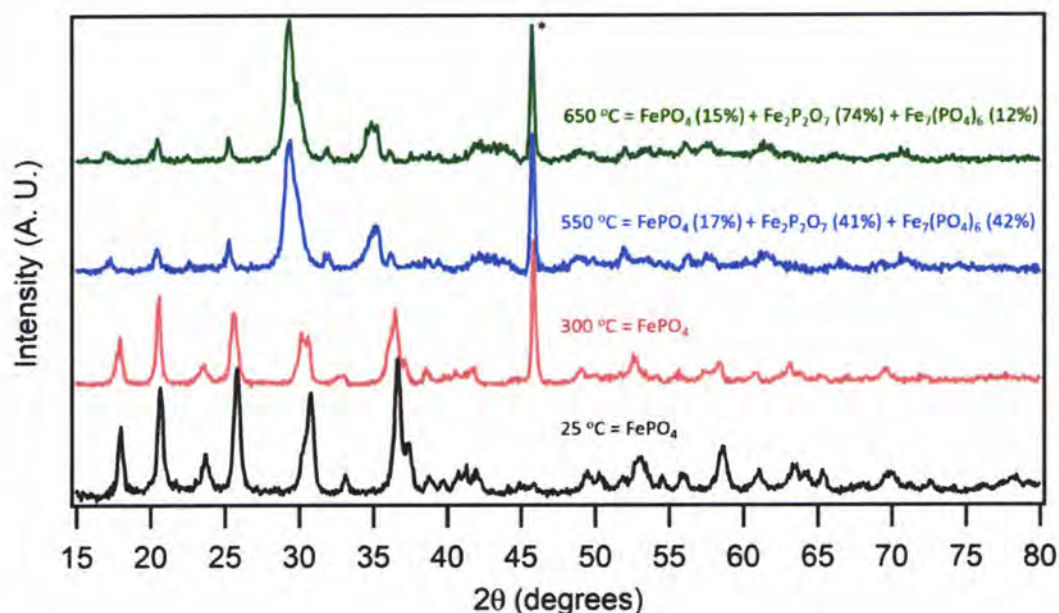
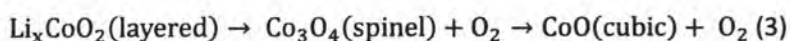


Figure 5. Temperature-resolved XRD of 100% SOC LFP cathode. * is an impurity peak associated with the sample holder used for TR-XRD (the 25 °C sample used a different holder).

DSC of the LCO cathode in **Figure 3D** reveals an initial small exothermic peak onset at ~150 °C (α), immediately followed by a larger exothermic peak (β) whose maxima and definition increases with increasing SOC. At lower SOC (0% and 50%), the peak onset (γ) and maxima are shifted to higher temperatures. Exotherm definition is lost at 50% SOC and becomes hard to definitively pull out of the baseline at 0% SOC. Upon charging (cathode delithiation), layered LCO becomes metastable and loses oxygen when subjected to temperatures above 200 °C.⁵¹ These two exotherms match well with the two mass losses seen in **Figure S4D** TGA results. Decreasing SOC results in decreasing mass loss at higher temperatures, representing a more stable cathode material. The oxygen mass loss beyond 200 °C was confirmed by temperature-resolved XRD of the 100% SOC LCO cathode (**Figure 6A**). CoO_2 decomposition is expected to go as¹⁷:



As can be seen from the XRD patterns in **Figure 6A**, this decomposition is not smooth, and multiple phases exist simultaneously, suggesting that there are kinetic or diffusion limitations. At 25 °C, the XRD profile is a convolution of Li_xCoO_2 and Co_3O_4 patterns. As the temperature increases, Li_xCoO_2 is gradually decomposed into increasing concentrations of Co_3O_4 and CoO . This results in the complex exotherms observed in the DSC (**Figure 3E**) and gradual TGA mass loss above 200 °C (**Figure S4D**). At 0% SOC, the

cathode is far more stable, resulting in a reduced DSC exotherm and TGA mass loss. The TR-XRD pattern of the 0% SOC LCO cathode in **Figure 6B** shows no major decomposition until temperatures rise beyond 400 °C, as expected from the higher stability of fully lithiated cathode material.⁵¹ The SOC dependence evident in the cathode TR-XRD complements the trend in increasing HR_{max} with SOC observed in ARC data, **Figure 1A**.

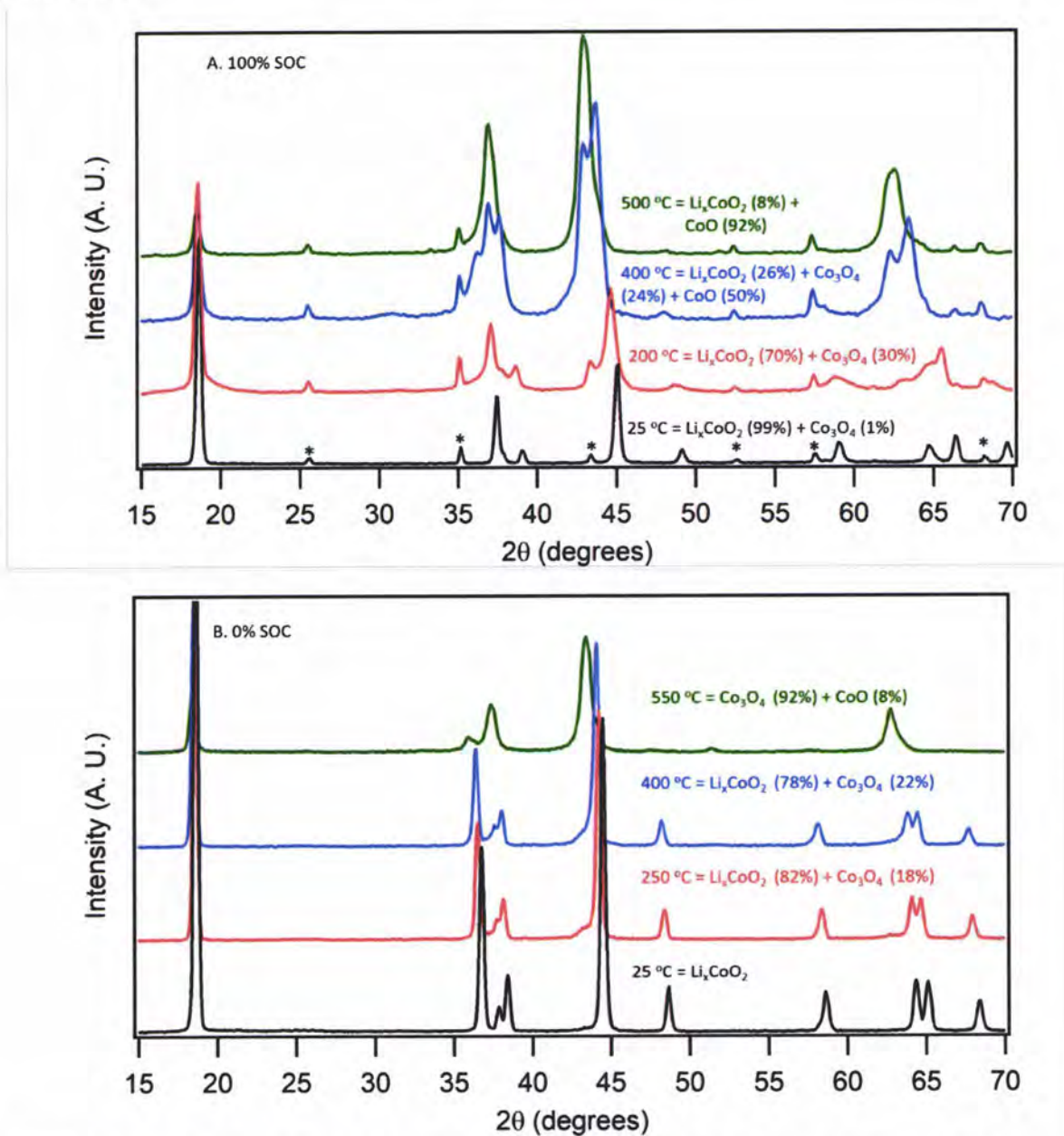


Figure 6. Temperature-resolved XRD pattern of the (A) 100% SOC and (B) 0% SOC LCO cathode. Alumina peaks exist at all temperatures surveyed for the 100% SOC sample and are indicated with an *.

The behavior of NCA is very similar to LCO, here with a one-step exotherm observed in **Figure 3F** and onset of ~ 150 °C. (In **Figure S4F**, the TGA mass loss identifies two distinct steps. The first distinct mass loss stage is followed by the second gradual loss until 550 °C. This again can be attributed to the metastable nature of the NCA cathode upon charging.) Just as in the LCO cell, lower SOC materials experience increased DSC onset temperatures and decreased exotherms and mass loss. Temperature-resolved XRD was performed on NCA at 100% SOC, and more distinct decomposition steps were noted (**Figure 7A**). The decomposition pathway was expected to be the same as described for LCO above (Eq 3).⁵²⁻⁵³ We fit the diffraction profile to Li_xCoO_2 (DB card # 01-076-3173) because the crystal structure does not change drastically with transition metal substitution (Co or Ni). At 25 °C, only the layered transition metal oxide exists, Li_xMO_2 (where M refers to the transition metal, either Co or Ni). At 200 °C, a majority of Li_xMO_2 has decomposed into M_2O_3 . Comparing to LCO in **Figure 6A**, the change in crystal structure is much more pronounced for NCA. This means that more O_2 and heat was released as more material decomposed. By 500 °C, mostly MO remains. This defined and rapid decomposition is likely responsible for the greater than three-fold increase in HR_{max} , $\text{HR}_{\text{max,nominal}}$, and $\text{HR}_{\text{max,fraction}}$ observed in NCA compared to LCO cells. In the 0% SOC NCA cathode XRD spectra, **Figure 7B**, the material is largely stable through 400 °C. By 600 °C, the layered Li_xMO_2 has almost entirely decomposed into MO. Just as in the LFP and 0% SOC LCO cells, the 0% SOC NCA ARC data did not appear to include a cathode contribution. Although $\text{LiNi}_x\text{Co}_y\text{Al}_{1-x-y}\text{O}_2$ exhibits the highest rates of thermal runaway among the three cathode materials tested in this work, the fully lithiated form undergoes runaway at a rate comparable to that of LFP cells. The small exotherms observed in 0% NCA are likely tied to electrolyte decomposition.

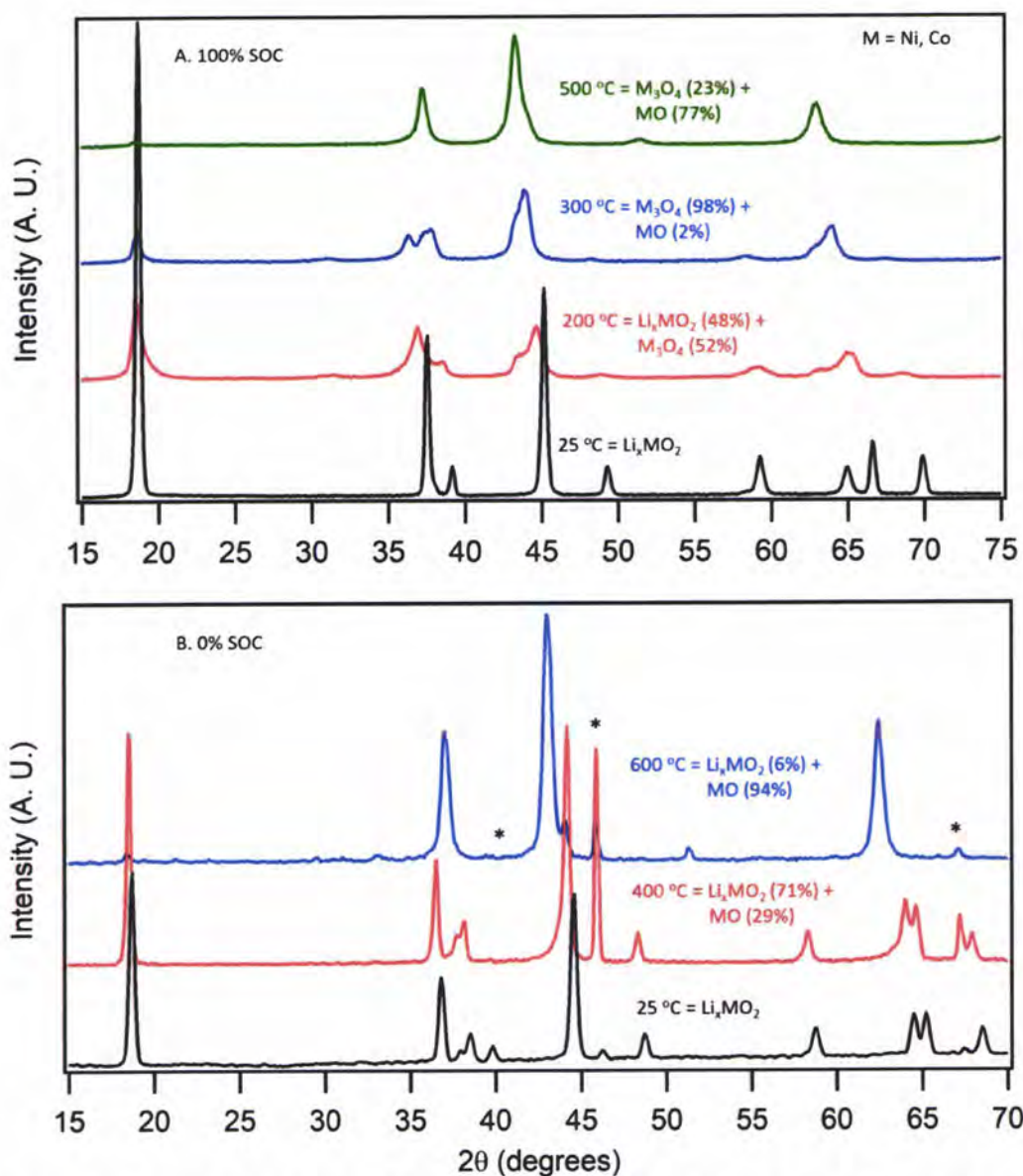


Figure 7. Temperature-resolved XRD pattern of the (A) 100% SOC and (B) 0% SOC NCA cathode. Alumina peaks exist at all temperatures surveyed for the 0% SOC sample and are indicated with an *.

3.3. Multi-Scale Comparison

Figure 8 and **Tables S2-S5** summarize the decomposition of all three chemistries across the component and whole cell scale. They demonstrate how the onset and peak temperatures of anode, cathode, and separator degradation, as measured by DSC, are related to the onset of the whole cell self-heating and thermal runaway, measured by ARC. All of the components in this study were analyzed as-received from the disassembly of commercial cells, without extensive characterization of the amount

and composition of lingering electrolyte. Thus, the influence of electrode-electrolyte interactions on onset temperatures and total heat release was not fully explored in this work, though the topic has been considered in previous component level studies.⁵⁴ In this study, one possibility is that anomalous shifts in the apparent baseline of the DSC data may be attributable to varying amounts of electrolyte in the samples. Since no additional electrolyte was added to the electrodes, as is sometimes done in DSC studies, the peaks may also be smaller in magnitude than those observed in previous studies.

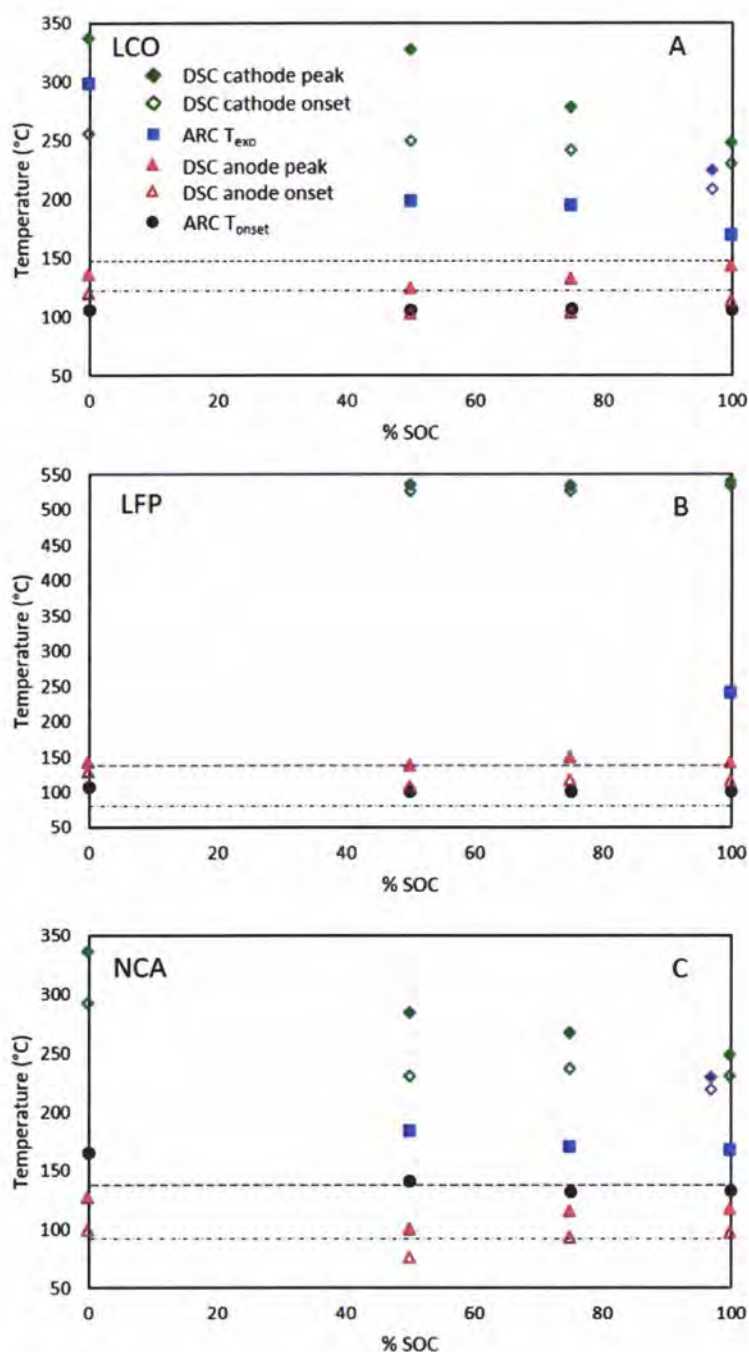


Figure 8. Comparison of component and whole cell degradation onset and peak temperatures for (A) LCO, (B) LFP, and (C) NCA cells. The dash-dot line is the DSC onset of the endotherm for separator breakdown and the dashed line is the peak. Green diamonds represent DSC cathode data and red triangles DSC anode data. Outlined points represent onset temperatures and filled represent peak temperatures. Black dots represent temperature onset in ARC while blue squares represent T_{exo} in ARC.

The filled purple diamond is the DSC cathode peak and the empty purple diamond the cathode onset for 100% SOC at a scan rate of $3\text{ }^{\circ}\text{C min}^{-1}$ (offset on the x-axis for easier viewing). The rest of the DSC data was collected at $15\text{ }^{\circ}\text{C min}^{-1}$. If a data point is not given, the designated thermal event did not occur.

A key objective of the multi-scale comparison is to understand the self-consistency of different thermal characterization techniques, particularly the ability of component level characterization to predict whole cell behavior. One of the outcomes of this study was the recognition that while ARC protocols for whole cells are fairly standardized (for example, the onset of self-heating is typically defined as $0.02\text{ }^{\circ}\text{C min}^{-1}$), the lack of standardization for component-level DSC and TR-XRD protocols makes comparisons among different studies difficult. One critical variable is heating rate, as the finite thermal conductivity of the sample medium will affect the apparent onset temperatures of chemical processes in this sample. For example, the faster the temperature rises in ARC, DSC, or TR-XRD, the higher will be the perceived onset temperature for a reaction or phase change.²¹ These are not equilibrium processes. In this study, all of the DSC analysis was initially carried out at a scan rate of $15\text{ }^{\circ}\text{C min}^{-1}$, which is within the range commonly used in the battery component abuse literature. To determine the heating rate effect on onset temperatures, the measurement was repeated at $3\text{ }^{\circ}\text{C min}^{-1}$ for the 100% LCO and NCA cathodes (**Figure S9**). At $3\text{ }^{\circ}\text{C min}^{-1}$, the LCO cathode showed an onset temperature of $208\text{ }^{\circ}\text{C}$, compared to $229\text{ }^{\circ}\text{C}$ at $15\text{ }^{\circ}\text{C min}^{-1}$, and the NCA cathode had an onset of $218\text{ }^{\circ}\text{C}$, compared to $230\text{ }^{\circ}\text{C}$ at $15\text{ }^{\circ}\text{C min}^{-1}$. Thus, the real equilibrium value of component-level onset temperature is likely moderately lower for all of the points indicated in **Figure 8**. However, this result would not qualitatively affect the presented discussion as the relative positions of the data points are still the same across different measurements (for example, cathode DSC onset temperatures are still significantly above the ARC onset of thermal runaway). With this in mind, the following sections lay out the proposed degradation pathway for each chemistry, relying on all thermal characterization techniques.

3.3.1. LCO Decomposition

When charged, the LCO cells appear to fail as a result of anode and separator decomposition. For these cells, the whole cell ARC self-heating onset temperature was close to the anode DSC exotherm onset (about $110\text{ }^{\circ}\text{C}$). The latter coincided with phase transition of LiC_6 to LiC_{12} by $100\text{ }^{\circ}\text{C}$, as evidenced by TR-XRD of the anode component. The exothermic decomposition of the SEI and anode fueled the endothermic degradation of the separator (peak at $148\text{ }^{\circ}\text{C}$ according to component level DSC). A combination of a soft short circuit from gradual separator decomposition and a developing thermochemical reaction enabled whole cell thermal runaway, with onset temperatures ranging from

168 to 198 °C (from 100% to 50% SOC). In all charged states, the ARC onset of whole cell runaway preceded both the DSC onset of the major cathode exotherm (229 to 249 °C, from 100% to 50% SOC) and the initiation of a TR-XRD phase change from Li_xCoO_2 to Co_3O_4 (just below 200 °C). These results suggest that thermal runaway is initiated primarily by the anode and separator breakdown. Therefore, we posit that improving cathode component stability alone is insufficient to lower cell runaway onset temperatures, though it can lower the overall heat release.

3.3.2. NCA Decomposition

Similar to LCO cells, the failure of NCA cells occurs before the cathode degradation. The NCA anode showed DSC onset temperatures slightly lower than those of the LCO anode (consistently < 100 °C). However, while the LCO cell showed close agreement between anode degradation and the whole cell ARC self-heating onset, in the NCA cell, the whole cell onset was consistently at least 30 °C higher than the onset of DSC anode exotherms and the TR-XRD phase transition of LiC_6 to LiC_{12} . This gap between the start of the anode component and the whole cell degradation suggests an unevaluated thermal role of the electrolyte, which would not have been adequately captured in DSC evaluation of anodes extracted from the cells. Previous reports of ARC on various commercial 18650 NCA cells at 100% SOC have indicated self-heating onset temperatures ranging from 51 °C to 100 °C (133 °C in this study).^{30,55} This degradation enables separator breakdown, evidenced by the substantial DSC endotherm at 140 °C. As with the LCO cell, the onset of thermal runaway in the ARC for a charged cell (166 to 182 °C, from 100% to 50% SOC) preceded both the DSC cathode exotherm, ~230 °C, and significant TR-XRD phases changes (Li_xTMO_2 to TM_3O_4).

3.3.3. LFP Decomposition

In the LFP cells, the anode DSC exotherm onset and whole cell ARC self-heating onset were consistent with that of LCO cells and showed no SOC dependence. Again, the SEI and anode decomposition was followed by separator breakdown at 141 °C. However, in this case, separator breakdown did not cause whole cell thermal runaway due to the inherent stability of the cathode material. Cathode component DSC showed exotherm onset temperatures of ~530 °C and TR-XRD phase changes (from FePO_4 to $\text{Fe}_2\text{P}_2\text{O}_7$ and $\text{Fe}_7(\text{PO}_4)_6$) were apparent between 300 and 550 °C. Only the 100% SOC LFP cell exhibited a heating rate above 1 °C min⁻¹ (by 241 °C), but the maximum heating rate was still only 4.5 °C min⁻¹, orders of magnitude smaller than LCO and NCA.

The different degradation processes showed a mixed dependence on SOC. Except for the NCA cells, neither the DSC anode onset nor the ARC whole cell self-heating onset showed SOC dependence. However, among all cells, the ARC onset temperature of whole cell thermal runaway decreased and the

overall heat release increased with increasing SOC. Similarly, by DSC, all of the cathodes showed increasing exotherm magnitude with increasing SOC. The fact that the SOC has little influence on whole cell and anode onset temperatures but does influence the start of runaway and overall heat release is relevant to addressing the safety concerns of LIB systems.

4. Conclusions:

We have investigated the multi-scale thermal stability of Li-ion battery failure at the component material level using TGA/DSC and temperature-resolved XRD. This component decomposition is compared to whole cell ARC failure. Component data confirms that the exothermic decomposition of the SEI and anode is responsible for whole cell self-heating onset temperatures. SEI decomposition is observed in DSC and TGA data. TR-XRD revealed anode delithiation begins at 100 °C when charged to 100% SOC, and is similar for all anodes. Energy from anode decomposition then catalyzes separator melting. The fact that the ARC onset of whole cell thermal runaway was consistently at least 30 °C above the DSC endotherm peak for the separator suggests that runaway is fueled by a developing short circuit from the decomposing separator coupled with thermochemical reactions, rather than a hard short. The high runaway rates present for LCO and NCA cells exceed the capabilities of the ARC to provide an adiabatic environment and the data should be considered qualitative. However, a trend still exists in HR_{max} , $HR_{max,nominal}$, and $HR_{max,fraction}$ when comparing LCO and NCA. According to DSC and TR-XRD, the NCA cathode decomposes suddenly, releasing oxygen and heat rapidly upon heating, whereas the LCO cathodes decomposes stepwise. This correlates to the three-fold or greater HR_{max} , $HR_{max,nominal}$, and $HR_{max,fraction}$ observed in ARC for NCA cells compared to LCO cells. The LFP cells had the lowest HR_{max} and $HR_{max,nominal}$ of all cells tested. This can be attributed to the stability of the $LiFePO_4$ cathode, which did not decompose until after 500 °C during DSC evaluation. This detailed and comparable thermal stability information on various cell chemistries at different SOC's is valuable when engineering future failure mitigation strategies or inherently safe cells. Understanding the cascade steps from thermal runaway onset to maximum heat release is critical when rationally approaching a safer cell or system design.

Supporting Information.

Supplemental figures include additional TGA/DSC, XRD, ARC, and pressure data. This material is available free of charge via the Internet. The link to raw data used in this paper is located on the internet at <https://www.sandia.gov/energystoragesafety-ssl/research-development/research-data-repository/>.

Corresponding Author:

* Summer R. Ferreira, email: srferre@sandia.gov

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none

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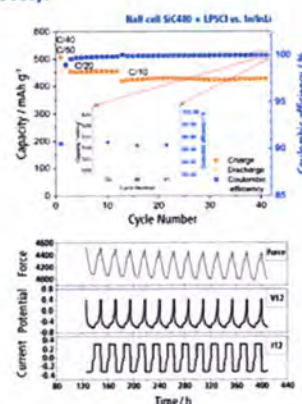
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Investigating the Role of Energy Density in Thermal Runaway of Lithium-Ion Batteries with Accelerating Rate Calorimetry

Joshua Lamb,^{1,*}  Loraine Torres-Castro,¹  John C. Hewson,^{1,2,*}  Randy C. Shurtz,^{1,2,*} 
and Yuliya Preger^{1,3,*} 

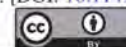
¹Power Sources R&D, Sandia National Laboratories, Albuquerque, New Mexico, United States of America

²Fire Science and Technology, Sandia National Laboratories, Albuquerque, New Mexico, United States of America

³Energy Storage Technology and Systems, Sandia National Laboratories, Albuquerque, New Mexico, United States of America

This work uses accelerating rate calorimetry to evaluate the impact of cell chemistry, state of charge, cell capacity, and ultimately cell energy density on the total energy release and peak heating rates observed during thermal runaway of Li-ion batteries. While the traditional focus has been using calorimetry to compare different chemistries in cells of similar sizes, this work seeks to better understand how applicable small cell data is to understand the thermal runaway behavior of large cells as well as determine if thermal runaway behaviors can be more generally tied to aspects of lithium-ion cells such as total stored energy and specific energy. We have found a strong linear correlation between the total enthalpy of the thermal runaway process and the stored energy of the cell, apparently independent of cell size and state of charge. We have also shown that peak heating rates and peak temperatures reached during thermal runaway events are more closely tied to specific energy, increasing exponentially in the case of peak heating rates.

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Establishing a framework for understanding the hazards associated with thermal runaway reactions of lithium-ion batteries (LIBs) has become increasingly important in recent years as LIBs continue to capture new markets involving an array of abuse-prone applications such as electric vehicles, home energy storage systems, and utility storage. As these batteries are scaled up in size from Wh for consumer products to $\geq$ kWh for transportation or utility storage, the safety issues associated with these battery systems merit increasing concern. The maturity of the technology and the widespread public adoption is dependent on quantifying and mitigating the rising safety concerns related to thermal runaway.

LIB thermal runaway is caused by either an internal defect or an external source, often categorized as **thermal (overheating)**, **mechanical (crush/puncture)**, or **electrical failure** (short circuit, overcharge). Thermal runaway can potentially result from relatively normal operating conditions where the heat generation rate of the cells exceeds the heat removal from the battery system. The thermal runaway event could be extremely energetic with a high probability of generating smoke, fire, and particulate ejecta that could be critically dangerous for the user and/or system. Traditionally, this is evaluated using battery abuse tests that perform qualitative or semi-quantitative measurements of the severity of a battery failure. Engineers and researchers rely on temperature measurements, voltage measurements, and visual observations to provide an overall evaluation of the severity of catastrophic battery failure. Abuse testing manuals and standard testing procedures are available from several organizations, with examples in Refs. 1–5. These typically rely on multiple tests to provide a broad, often qualitative understanding of thermal runaway in batteries. When a better understanding of material properties is desired, however, researchers typically turn to various calorimetry methods, such as accelerating rate calorimetry (ARC), to quantify the energy and kinetics of battery failure.

The use of ARC for evaluating lithium-ion batteries was pioneered in work by Dahn et al. studying the response of individual active materials^{6–14} and further developed for full cells by Roth et al.^{15–17} ARC closely simulates an overtemperature abusive test, yet it also provides reliable results at low internal heating rates, which is crucial to

quantify the kinetics of the reaction. Furthermore, it provides essential information about the anatomy of catastrophic failure, which can be grouped into three major temperature regimes, as shown in Fig. 1; Stage 1: initial self-heating to thermal runaway onset, Stage 2: accelerating to thermal runaway, and Stage 3: high rate exothermic decomposition. Figure 1 illustrates this behavior for a typical layered metal oxide cell, but the temperatures observed and the magnitude of the peak heating rate can vary significantly depending on the cell chemistry, state of charge (SOC) and size of the cell.

The close study of ARC testing has allowed the deconvolution of the various stages of thermal runaway of a lithium-ion battery. Electrolyte degradation can begin as low as 50 °C–60 °C^{18–21} and has been previously shown to have an exothermic contribution even in the absence of active materials; this is likely responsible for the onset of the low rate self-heating in Fig. 1.²² As this heating progresses, the anode SEI can decompose allowing further reaction of the anode with the electrolyte.^{8,9,23,24} Early ARC studies by Dahn's group^{9,11} and subsequent differential scanning calorimetry studies by Yamaki et al.²⁵ showed that mild heating occurs when the anode is heated between 100 °C and 200 °C. This process also drives further decomposition of the electrolyte, leading to the venting that is typically observed in lithium-ion batteries at high temperatures.^{22,26–37} This combination of anode decomposition and electrolyte breakdown are the most likely causes of the accelerating heating observed in the transition to high rate runaway shown in Fig. 1.

When using layered metal oxide cathode materials such as LiCoO₂ (LCO), LiNi_{1-x-y}Mn_xCo_yO₂ (NMC), LiNi_{1-x-y}Al_xCo_yO₂ (NCA), and LiMnO₂ (LMR) breakdown typically begins occurring at $\sim$ 180 °C–200 °C and has strongly accelerating rates of exothermic heat release.^{12,38–45} This eventually leads to the high-rate thermal runaway event. When exploring cathode materials beyond layered metal oxides, similar transitions in behavior are often observed, but the mechanisms may change and the temperatures of various events can vary significantly. Cathode materials like LiFePO₄ (LFP) and LiMn₂O₄ (LMO) in particular typically exhibit less energetic breakdown and/or breakdown at higher temperatures,^{13,46} but will still exhibit electrolyte breakdown as well as SEI and anode decomposition. Further, the decomposition products from common electrolytes are typically flammable and present a source of energy during thermal runaway unrelated to the active materials.²²

*Electrochemical Society Member.

*E-mail: jlamb@sandia.gov

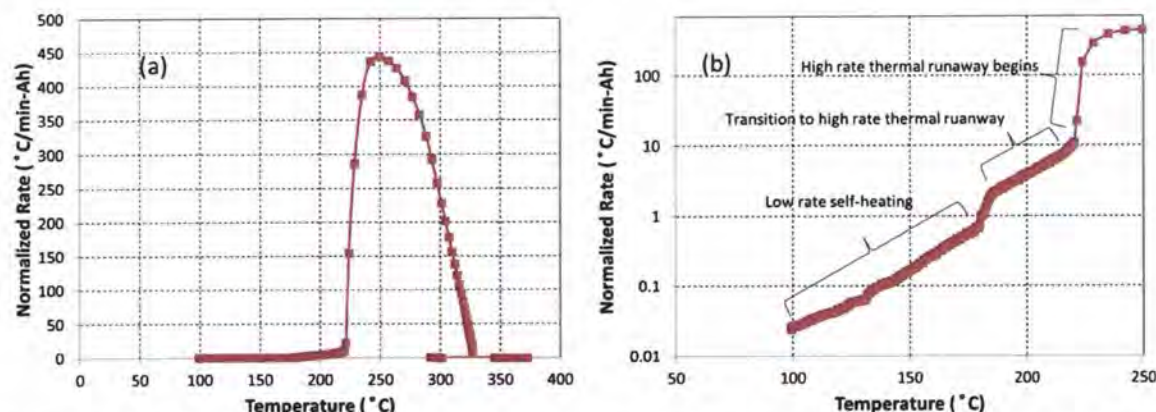


Figure 1. Basic ARC data collected from an NMC-graphite cell showing various features of thermal runaway. Figure (a) shows the full exotherm event, in this case beginning at 95 °C and including a high-rate thermal runaway event at 225 °C. Figure (b) shows the onset processes from figure (a) on a logarithmic scale to better illustrate the low heating rate processes and the onset to thermal runaway.

Most ARC investigations reported in the literature have considered relatively small cells (<3 Ah) and form factors that are useful for materials evaluation, but these designs are increasingly becoming less relevant for modern applications. Feng et al.^{47,48} performed the most comprehensive calorimetry studies of large-format cells by ARC. In particular, they studied a collection of large-format cells in multiple chemistries⁴⁷ and were able to note some relationships with respect to cell SOC and energy density. Their data showed some exponential-like trends when plotting the peak heating rates in °C min⁻¹ vs specific energy in Wh kg⁻¹. They also showed similar behavior with respect to SOC as well as a potential linear relationship between peak temperatures and state of charge. This presents some direct evidence that thermal runaway risk might be tied to the stored energy of cells. However, there are certain aspects of ARC testing that may complicate such conclusions from these data. Notably, testing is typically done with some level of fixturing to contain and measure gas production or (in the case of pouch cells) restraints to limit expansion of the cell during thermal runaway. These constitute inactive masses that are in direct contact with the cell and effectively reduce the specific energy of the cell. Foreseeable impacts of this experimental approach include effectively reducing observed peak heating rates and temperatures.

The present work seeks commonality in the data that links the behavior across several different materials chemistries, sizes, and formats. This study analyzes and compares ARC results collected from cells ranging from 1 Ah 18650 cells to large-format cylindrical and prismatic cells up to 38 Ah. In addition to cells with layered metal-oxide cathodes, results are included from cells with LFP and LMO cathodes. The analysis also considers inactive masses of any cell holders or constraints in direct contact with the cells. Here we seek to identify any trends with increasing cell size and energy density and explore what these trends may mean for the safety of lithium-ion batteries. Further, this helps to expand the previous work to include more large-format cells, particularly cells relevant to vehicle electrification and grid scale energy storage. ARC presents a powerful tool for understanding new materials that are developed. Understanding how results change as capacity and energy density increase will help in understanding how future materials might impact energy storage systems.

Experimental

This work tested cells of various cathode chemistries, sizes and formats using ARC. Two primary test apparatuses were used for this work, both manufactured by Thermal Hazard Technologies. 18650 and smaller-format cylindrical cells were tested in the ES ARC while pouch-format and large-format cylindrical cells were tested in an Extended Volume ARC (EV ARC). In this study, the ES ARC has

been considered only for comparisons between chemistries in 18650 cells. These cells were tested in cell holders sealed from air under an N₂ atmosphere. The cell holders used for the ES ARC are nominally 112 g, constructed from stainless steel and have a calculated heat capacity of 56 J K⁻¹. This mass is included in calculations of total heat capacity for the experiment to approximate the role this plays on the thermal environment, as well as the reduced energy density created by the cell holder.

For all tests, initial heating of the cells was performed up to 50 °C, after which the ARC commenced a heat-wait-see mode. The cell would be heated by 5 °C followed by a 30-min wait. After the wait period, the ARC would repeat this process unless a self-heating ≥ 0.02 °C min⁻¹ was detected. Once this threshold was passed, the ARC maintained adiabatic conditions within the calorimeter and allowed exothermic self-heating of the cell to proceed. This period of self-heating constitutes the data collection period for the exothermic rate vs temperature plots shown in this paper. The heat-wait-see profile continued until a maximum temperature of at least 400 °C. At this point the calorimeter would no longer search for any additional exothermic reactions, although thermal runaway events may continue to higher temperatures. Further details on ARC testing procedures are available in the Sandia Abuse Test Manual.²

EV ARC testing was performed in open air inside the calorimeter due to the lack of standardization of battery sizes in larger formats. Constraints were used for pouch cells, which add mass and reduce the specific energy of the cell. The constraints are held in intimate contact with the cell and the masses are recorded to determine the total energy density of the fixture. ARC relies on maintaining an adiabatic environment during exothermic processes, but the heating rate that can be provided by the calorimeter is limited with respect to cell heating rates in full thermal runaway. The additional specific heat capacity of the cell holder helps reduce the cell heating rate during thermal runaway, which can thereby remain in the adiabatic region longer. Thermocouple placement was somewhat dependent upon the form factor of the cell being tested. In the case of pouch cells, thermocouples were attached to the negative tab of the cell. This provides good thermal conduction to the cell interior during adiabatic heating of the cell; however it may be slower to respond to the highest heating rates. This also prevented potential damage to the thermocouple when using physical constraints on pouch cells as damage to the sheath of the thermocouple may lead to erroneous readings. Thermocouples on cylindrical cells were attached to the side of the cell at approximately the half-height position of the cell cylinder. Schematics showing typical thermocouple placement are shown in Fig. 2. The rationale of this thermocouple selection is to best capture a representative temperature of the device under test and to capture the heat generated by materials decomposition within the

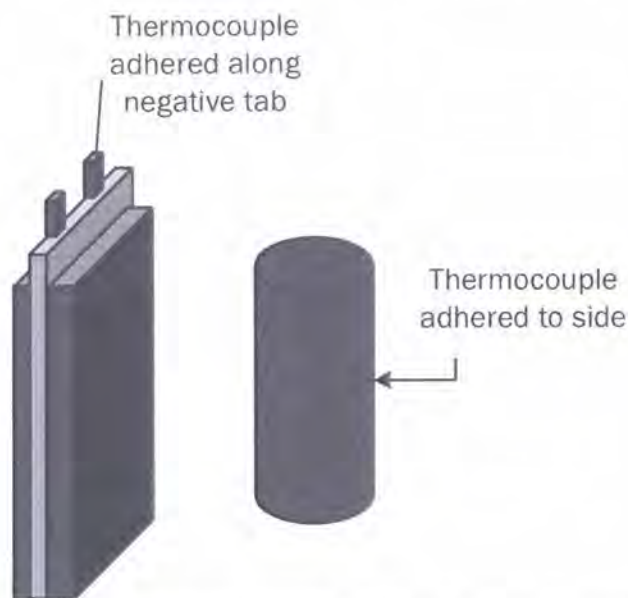


Figure 2. Schematic showing typical thermocouple placements for primary sensors during testing.

cell. Other placements would better capture combustion of vented gasses, but self-ignition of the vent gasses can be unpredictable and not well suited to comparing multiple cells and chemistries.

The heat capacity of cell holder materials was calculated based on measured mass and construction materials. Cell heat capacities (if not readily available) were estimated using an average value of $0.9 \text{ J g}^{-1} \text{ K}^{-1}$, based on previous observations of 18650 cells.¹⁶ Stored energy values used in this work were converted from the as-charged capacity to a total stored energy value.

The temperature rise rate obtained from the ARC can be converted into a heat release rate by multiplying it by the combined heat capacity of the cell and holder

$$q_{\text{ARC}} = (m_{\text{cell}}c_{p,\text{cell}} + m_{\text{holder}}c_{p,\text{holder}}) \left. \frac{dT}{dt} \right|_{\text{ARC}} \quad [1]$$

where q_{ARC} is the cell heat release rate and m and c_p are the mass and specific heat capacity of the cell and holder as indicated by the sub-index. For heating rates normalized to cell capacity, the reported heat release is also multiplied by the cell capacity to get the heat release rate.

Numeric results of the ARC tests were determined primarily from the dT/dt Rate vs Temperature plots, normalized to stored energy values. The masses of the cells and all fixturing materials in direct contact with the cell were recorded and used to generate a calculated heat capacity of the system under test. The enthalpy of the thermal runaway event is typically determined by evaluating the change in temperature for the full cell exotherm.

Results and Discussion

ARC results.—Sandia National Laboratories has long used ARC to compare the energetics of new chemistries. This has typically been done by constructing 18650-format cells of $\sim 1 \text{ Ah}$ with the materials in question for test. A collection of these data taken in the ES ARC in sealed sample holders is presented in Fig. 3. This shows a broad array of the thermal runaway behavior of several widely used battery chemistries. Even a cursory glance will note the high runaway kinetics of NCA and LCO cathodes compared to an LFP cathode. While the composition of the battery materials themselves likely have the most pronounced effects and data here is differentiated by cathode and anode material, other properties may impact thermal runaway behavior to a

more limited degree. Material properties such as anode and cathode material specific surface areas may impact electrode-electrolyte interactions and may be worth exploring further.

Beyond chemistry, SOC is also well-understood to play a role in both the total energy and kinetics of thermal runaway. This was explored on a 16 Ah pouch-format LMO cell where the thermal runaway was evaluated at different states of charge. The summarized data are presented in Fig. 4 and the full ARC results and are provided in the supplemental information. The authors have also provided the raw data for this test at <https://www.sandia.gov/ess-ssl/data-repository/>. We ultimately identified two different trends in these data. First, the total enthalpy calculated for the cell thermal runaway event follows a linear pattern. It is worth noting that even at 20% SOC some exothermic activity was detectable. This observed linear trend with SOC is consistent with expected behavior for the major decomposition reactions in both the cathode and the anode. Meanwhile, the peak self-heating rates for this cell increase rapidly at high states of charge. The data in Fig. 4 fit an exponential pattern, with a rapid increase in peak heating rates observed above 60% SOC. The exponential pattern is consistent with expected kinetic behavior for the decomposition reactions at high states of charge; as more heat is released, it will cause more of the decomposition reactions to occur at higher temperatures, where the Arrhenius rates are exponentially higher.^{23,49}

Comparison of capacity and specific energy.—The above analysis considers only the as-charged capacity of cells as the normalizing factor. This provides a means to quickly and easily compare the relative thermal runaway risks posed by different lithium-ion chemistries and at different states of charge, provided the test cells have similar masses and total electrochemical capacities. However, analysis in terms of SOC alone does not provide good correlation to the reactions that drive thermal runaway processes. Developing a better understanding of the thermodynamics and kinetics of the reactions that drive thermal runaway requires a more relevant basis for normalizing data. Cell constraints and cell holders are often used, which present additional inactive mass to the system; when we move to higher capacity cells it requires performing tests in larger, non-standardized test fixtures. While for practical reasons these additional inactive masses cannot be fully avoided, we can evaluate their mass and heat capacity and include them in the total values for the cell being evaluated. As we assume the ARC is adiabatic, we assume here that any inactive mass in direct contact with the cell should be included in the overall mass for comparison to other formats and chemistries.

The data presented in Fig. 5 and Table I consider cells in an as-charged capacity range of 1.08–38 Ah (3.5–122 Wh) and chemistries including LFP, NMC, and NCA taken from historic data previously collected at Sandia as well as the LMO data shown in Fig. 4. These data were limited to results collected in open-air testing using the EV ARC, and the physical constraints used varied based on the cell construction and geometry. This variation in mass is accounted for in the overall energy density of the cells shown in Fig. 5b. The raw ARC data are provided in supplemental information. These data show the total enthalpy of thermal runaway as a function of the as-charged stored energy, and the peak thermal runaway temperatures as a function of the specific energy, calculated as described in Eq. 1 and accounting for the mass of any inactive material. This effectively corrects for the relatively high mass of the test apparatus when testing low capacity cells, as well as cells of similar chemistries with different specific energies.

Figure 5a tracks how the heat released during thermal runaway is impacted by the total energy storage of the cell. The enthalpy of the thermal runaway event tracks linearly with the total stored energy. This indicates safety implications for even low-specific energy cells or cells at lower states of charge. The stored energy is still available to potentially initiate events like cell venting and fire. If the cells in question are well insulated (similar to the adiabatic environment of the present study), even a low rate of energy release is able to drive

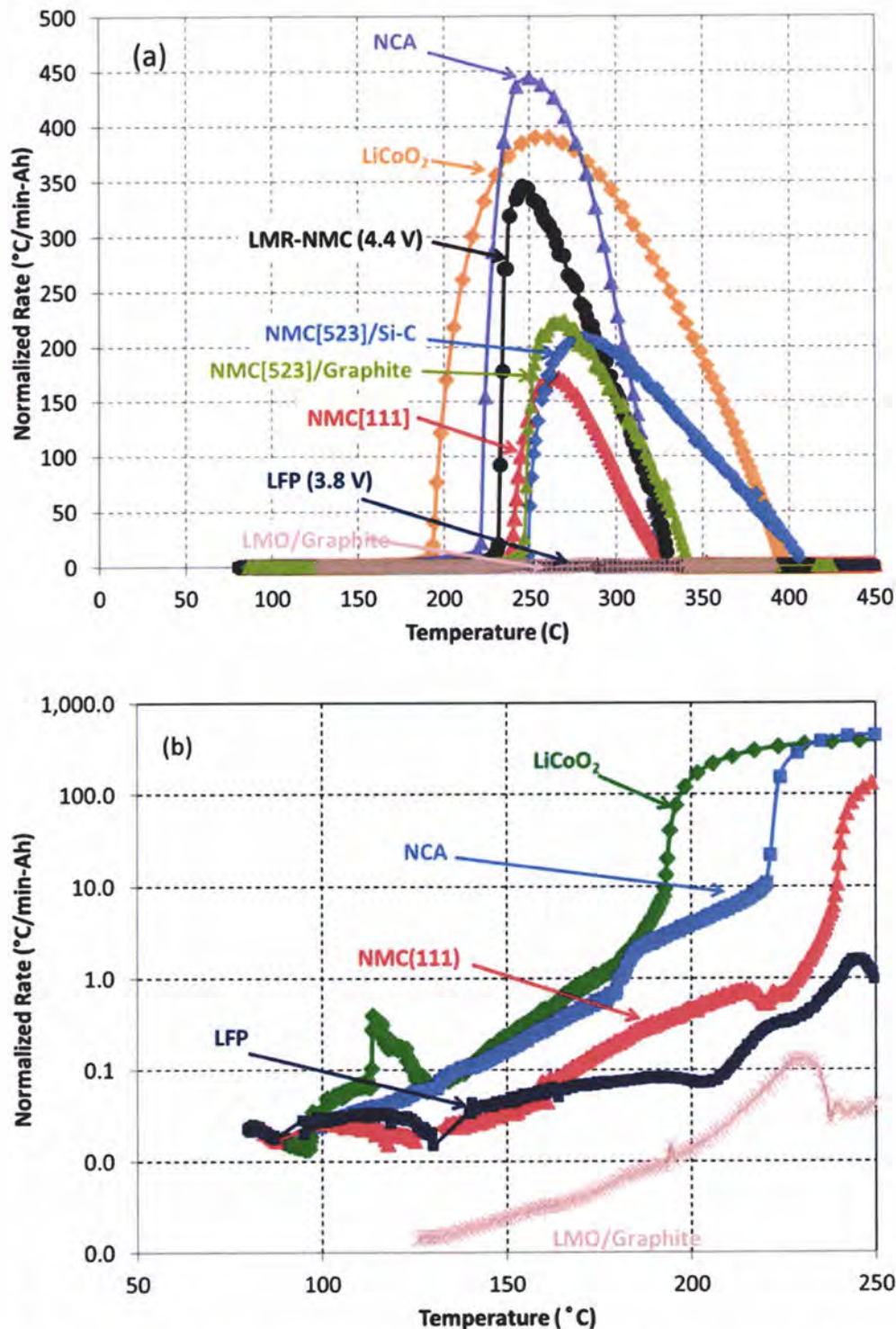


Figure 3. Accelerating rate calorimetry data showing comparisons of several common chemistries (a) and a logarithmic plot of select data showing low rate behavior as well as peak heating rates of less active materials, notably LFP cathode cells (b).

the cells to high temperatures. This is similar to results observed by Liu et al. that found increasing energy released during thermal runaway with increasing energy stored.⁵⁰

More qualitatively, it can be useful to evaluate the ARC measurements in terms of the maximum thermal runaway temperature. These data are shown in Fig. 5b with the peak temperature as a

function of specific energy. These data show in stark terms the increase in potential risk as specific energy increases. As higher energy density cells are fielded, it should be generally expected that peak temperatures observed in thermal runaway will increase. This becomes of particular concern if thermal runaway temperatures increase to a point where typical structural materials within battery

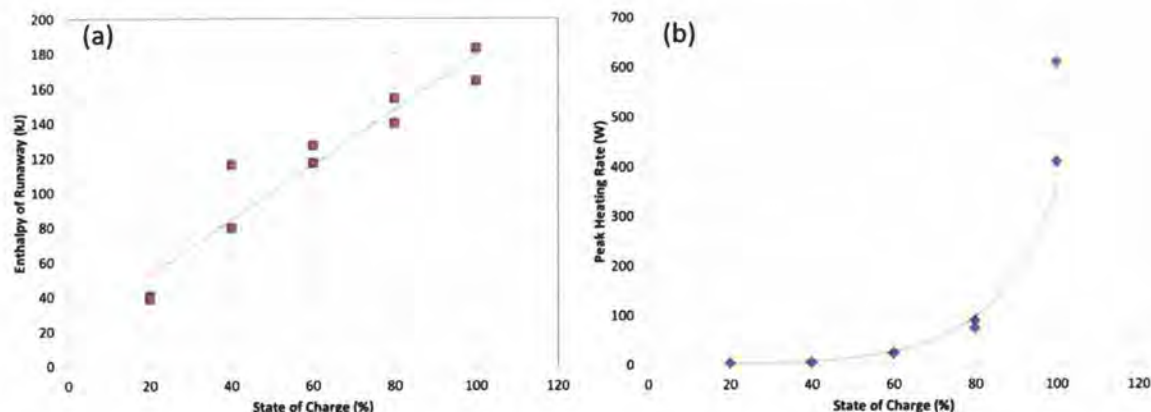


Figure 4. Runaway enthalpy (a) and peak heating rates (b) of a 16 Ah LiMn_2O_4 -graphite cell evaluated at various states of charge. The source ARC data is available in the supplemental information.

systems are affected (including aluminum, copper, and steel), increasing the likelihood of propagation to other cells.⁵¹

Meanwhile, peak heating rates follow an exponential curve (shown as linear on the log scale of Fig. 6) until very high specific energies, where the rate becomes roughly flat. This flattening at high peak heating rates may be a limitation of the equipment used, as at these high heating rates the ARC cannot match the high rates of self-heating. The exponential slope of the peak heat release rate as a function of the specific energy in Fig. 6, together with the related peak temperatures in Fig. 5b, suggest an Arrhenius approximation might be appropriate for analyzing the peak heating rates. This correlation between energy density and peak heating rates suggests that achieving a balance between high energy density and safety performance has limitations. While various precautions may reduce the likelihood of failure occurring (for example, a separator preventing the formation of internal short circuits), it may be difficult to fully avoid the potential consequences of thermal runaway without reducing the overall specific energy.

A more interesting question may be the implications of this work at the system level. Our own work on mitigating thermal runaway propagation has largely found the most success by increasing the inactive mass of the battery.^{51–53} In large multi-cell systems, the goal is to limit a single cell thermal runaway to only the immediate point of failure, or at least to delay any propagating failure long enough to allow the immediate vehicle or area to be evacuated. However, solutions that reduce the energy density of the system negate much of the advantage of advanced battery chemistries.

Consideration of activation energies.—The data from Fig. 6 are replotted in Fig. 7 with peak heating rate as a function of the

temperature of peak heat release; the Arrhenius format with logarithmic rates and inverse temperatures is suitable for considering activation energies of processes with the fastest heat release. This is similar to approaches commonly used to derive kinetic parameters from other types of calorimetry.^{54,55} The effective activation energies observed for LFP and LMO are both about 190 kJ mol^{-1} . The NMC data have more scatter, but the overall slope appears reasonably consistent with LFP and LMO cells. The slope of the high-temperature data from NCA cells is nearly flat, and the scatter between just four points precludes evaluating a meaningful activation energy (requires a negative slope and a correlation coefficient close to unity).

Other investigators have measured activation energies between 108 kJ mol^{-1} and 682 kJ mol^{-1} , with most values occurring below 225 kJ mol^{-1} ;^{56–58} the activation energies at lower temperatures on the right side of Fig. 7 are reasonably consistent with the full-cell measurements from literature. These full-cell effective activation energies apply most directly to the event corresponding to the most rapid heat release, which may include the simultaneous decomposition of multiple components. An activation energy in the vicinity of $65 \text{ kJ mol}^{-1} \text{ e}^{-1} \text{ ha}^{-1} \text{ s}^{-1}$ been proposed in some models for anode-electrolyte reaction heat release, though the same process can be fit by higher activation energies in the vicinity of 135 kJ mol^{-1} .^{9,23,24} Cathode decomposition and electrolyte oxidation are often suggested to have activation energies in the $120 \text{ kJ mol}^{-1} \text{ e}^{-1}$ range.^{10,12,59}

A recent simulation analysis in a cascading propagation scenario suggests that the high temperature heat-release rates transition to a lower activation energy at higher temperatures, perhaps an activation energy as low as 30 kJ mol^{-1} for temperatures around 600°C to 700°C .⁵² Such a shift is qualitatively consistent with the

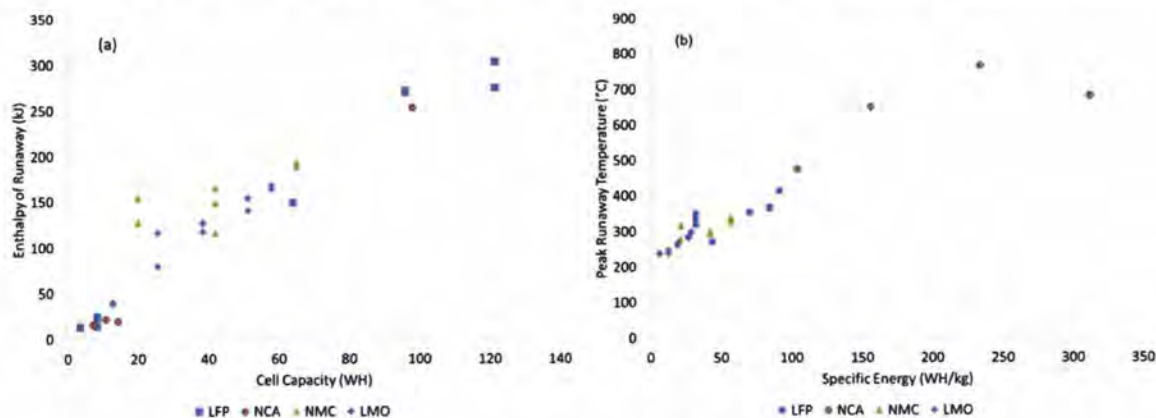


Figure 5. Runaway enthalpy as a function of as-charged energy in Wh (a) and peak runaway temperatures as a function of the cell specific energy (b). The total heat release is tied heavily to the stored energy available, but peak temperatures during thermal runaway are tied more closely to energy density.

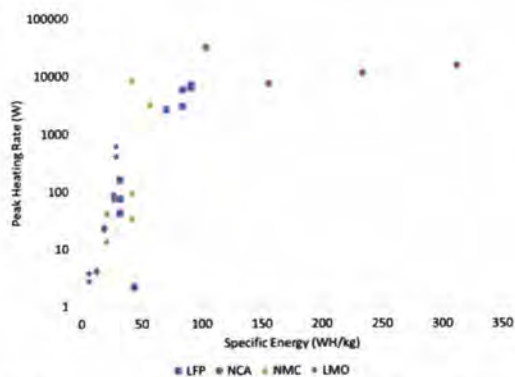


Figure 6. Peak heating rates shown as a function of specific energy. This shows an exponential increase until leveling off at the highest temperatures.

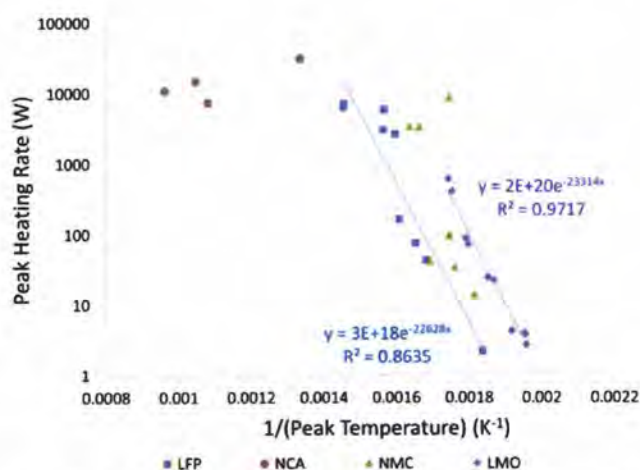


Figure 7. Peak heating rates shown as a function of inverse temperatures for at the peak heating rate.

high-temperature NCA data on the left side of Fig. 7 and implies a transition to a high-temperature regime where mass transport processes are limiting. Much of the variance of activation energies observed in literature is likely driven by the fact that most previous analyses require determination of activation energies at the component level. This work presents a potential means to evaluate the activation energies of thermal runaway at the full cell level, experimentally accounting for the multitude of reactions that can occur during a full-cell thermal runaway process.

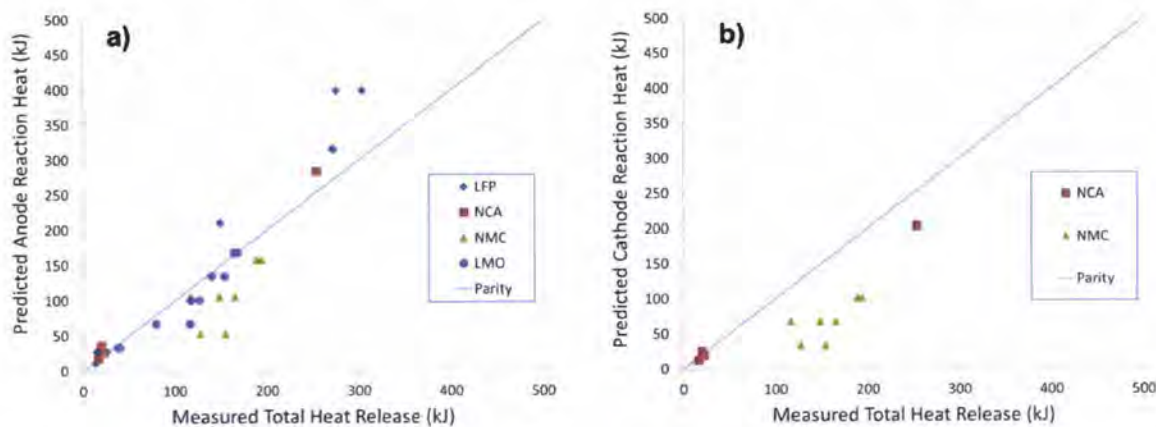


Figure 8. Predicted heat release from lithiated graphite anodes (a) and layered metal oxide cathodes (b) compared to experimental ARC heat release, assuming independent reactions with electrolyte.

Comparison to thermodynamics of major decomposition reactions.—Some of the trends discussed in the preceding sections can be explained in terms of the thermodynamics of the thermal runaway reactions. The quantity of reactive materials available for the major decomposition reactions in both electrodes is proportional to SOC (the number of transferred lithium atoms). This does not include thermal contributions from SEI and self-decomposition of electrolyte, but these are expected to be small compared to other sources. The enthalpy of decomposition for lithiated graphite with electrolyte has been calculated from thermodynamics and should be similar for the negative electrodes in all these cells.^{23,24}

Figure 8a compares the ARC measurements to estimates of anode heat release, assuming exothermic heat of $281.4 \text{ kJ mol}^{-1}$ lithium in the charged graphite anode.²⁴ The calculated anode heat release corresponds surprisingly well to the ARC heat release measurements; some possible explanations are presented below in connection with Fig. 9. The two lowest NMC points in Fig. 8a and subsequent plots correspond to the two NMC cells with lowest capacity in Fig. 5a, which depart farthest from the linear trend in both plots. If these particular NMC enthalpy measurements are overstated with respect to the rest of the data (possibly due to an overestimated heat capacity for pouch cells of the smallest size), then the corresponding points in Fig. 8a and subsequent plots would shift to the left, which would improve the trends in all cases.

Layered metal oxides decompose to rock salts when heated sufficiently, releasing 1 oxygen atom per delithiated site. When the enthalpy of this cathode decomposition reaction is lumped with the heat from oxidation of the solvent, thermodynamic calculations have shown that the heat generated per mole of delithiated metal oxide only varies by $\sim 10\%$ for LCO, NMC, and NCA.^{49,60} Therefore, cells with graphite anodes and layered metal oxide cathodes and liquid organic electrolytes should yield similar quantities of heat via thermal runaway reactions for a given quantity of stored energy. Figure 8b shows the heat release predicted for layered metal oxide decomposition with electrolytes, which is on the same order of magnitude as the anode heat release, but usually lower than the ARC measurements. A recently published thermodynamic database and calculation method^{49,60} was used for these estimates with the assumption that $\text{NCA} = \text{Li}_x\text{Ni}_{0.8}\text{Co}_{0.15}\text{Al}_{0.05}\text{O}_2$ and $\text{NMC} = \text{Li}_x\text{Ni}_{0.5}\text{Mn}_{0.3}\text{Co}_{0.2}\text{O}_2$. The predictions in Fig. 8 also assume that a discharged cathode is fully lithiated ($x = 1$ at SOC = 0).

In contrast, release of 0.5 oxygen atom per delithiated site has been estimated for decomposition of LFP^{45,46,61} and release of either 2 oxygen atoms⁶² or 1 oxygen atom^{63,64} per delithiated site has been proposed for decomposition of LMO. Because the number of oxygen atoms released per vacant lithium site is distinct for different types of decomposing cathode materials, oxidation of solvent with oxygen from the cathode cannot explain why the enthalpies of decomposition for different types of cathode materials would be similar on a

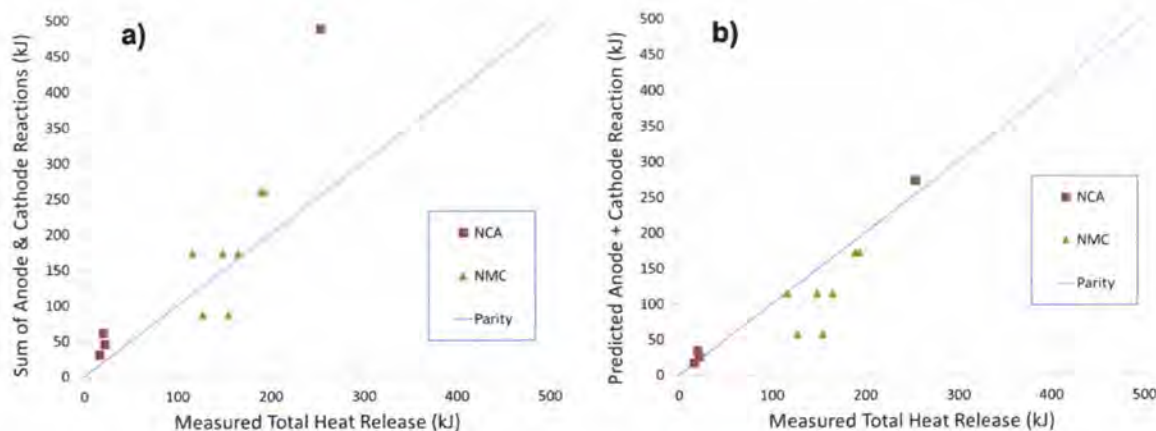


Figure 9. Predicted heat release from sum of each electrode reacting independently with electrolyte (a) and oxygen from layered metal oxide cathodes reacting with lithium from graphite anodes (b) compared to experimental ARC heat release.

vacant lithium site basis. Figure 8b does not include LFP or LMO because a thermodynamic database for the applicable reactants and products (similar to Ref. 49) has not yet been evaluated and published. Calorimetry of charged LFP cathodes⁴⁶ exhibits lower heat release than layered metal oxides, which is most likely due to the lower oxygen release per delithiated site in LFP.

Figure 9a considers NMC and NCA cathode materials and is a summation of the predicted anode heat release from Fig. 8a and layered metal oxide cathode heat release from Fig. 8b with respect to the ARC measurements. Since the predicted heat release from both electrodes is similar, the sum of heat release from both electrodes shown in Fig. 9a exceeds the ARC measurements by a factor of ~2 for both large and small NCA cells at different SOC, and a smaller margin for most of the NMC points. The excess predicted heat release for NCA cells may be explained in the same manner as recent simulations of full cells, where it was assumed that the individual electrode decomposition reactions illustrated in Fig. 8 were limited by venting electrolyte in order to limit cell temperature rise to a level consistent with experimental data.⁵²

Figure 9b compares the NMC and NCA ARC measurements to a competing reaction that has been proposed by several authors,^{47,65–68} wherein oxygen from cathode decomposition reacts with lithium from the anode, producing Li_2O as a product.⁶⁶ This path is expected to compete for the same reactants consumed by the decomposition reactions assumed in Fig. 8, and it could feasibly become dominant, especially after the electrolyte vents and the separator melts. Given that oxygen from the cathode is generally produced in excess of the amount needed to consume all the lithium in the anode, Fig. 9b provides a plausible explanation for why these decomposing full cells generate similar amounts of heat per unit of stored energy with different cathode materials. In reality, the anode decomposition reaction begins at a low rate near 100 °C,^{8,9,23} but the similar trends in Figs. 8a and 9b demonstrate nearly equivalent heats of reaction for the anode reaction with electrolyte ($281.4 \text{ kJ mol}^{-1}$ lithium in anode) and the reaction between anode lithium and cathode oxygen ($306.6 \text{ kJ mol}^{-1}$ lithium in anode for NMC-532 and $271.4 \text{ kJ mol}^{-1}$ lithium in anode for NCA). The similar activation energies with different cathode materials in Fig. 7 also lends credibility to the idea that a common reaction process whereby oxygen from the cathode reacts with lithium from the anode is responsible for the observed high-rate behavior for cells with different cathode chemistries. This may have implications as well when anode materials with varying levels of reactivity with oxygen are used.

The thermodynamics and residual species associated with decomposition of electrode materials (including cells utilizing LFP and LMO cathodes) should be investigated further in future works to see whether one of the two paradigms represented by Fig. 9. becomes more compelling. These paradigms are summarized as follows:

Fig. 9a shows that the measured heat release is less than the calculated heat release from decomposition of individual electrodes; previous simulations have shown that this excess heat production may be prevented if decomposition is limited by electrolyte (which vents from cells during thermal runaway).⁵² Figure 9b shows that a reaction between the two electrodes via an oxygen intermediate is thermally consistent with the ARC heat release measurements, and this proposed reaction happens to be energetically comparable to the decomposition of lithiated graphite with electrolyte.

Ultimately, this analysis suggests that the severity of thermal runaway reactions may be heavily tied to the energy density of the materials used for electrochemical storage and may be difficult to fully engineer out of a system. However, there are impacts from the inactive portions of the battery that are only briefly touched upon here and present important areas for improvement. The flammability of the electrolyte in lithium metal cells and lithium-ion cells presents a source of stored chemical energy in addition to that available from the stored electrochemical energy. It has been previously estimated that accounting for chemical combustion can significantly increase the released energy from a cell.^{31,33,69,70} In addition to the electrolyte, flammable plastic components have been reported to contribute significantly to the heat release in fire scenarios. While high energy density of the active materials is a desired feature of a battery, the flammability of the electrolytes and cell packaging materials is not. This makes the pursuit of chemically inactive electrolytes and cell packaging a very promising path to improve single-cell battery safety even as active material chemistry advances.

Conclusions

An evaluation of ARC data presented here, when normalizing for energy density, indicates that peak runaway temperatures in adiabatic environments tend to be linearly proportional to the cell specific energy. These data cover four cathode chemistries, multiple form factors, and stored energy ranging from 3.5 to 122 Wh. This follows from ARC measurements that show the heat released is also linearly proportional to the stored energy. More importantly, perhaps, ARC measurements of the heat-release rate suggest that the kinetics of cell failure display an exponential relationship with increasing energy density. This compares well to a materials-level analysis of oxygen release observed for layered metal oxide cathodes.

In a practical scenario, thermal runaway occurs when the self-heating rate of a battery failure event exceeds the heat loss rate in its current environment or installation. The logical next step is that increasing energy density will lead to increased consequences of thermal runaway occurring. With exponentially faster heat release at higher energy density it will be easier for the thermal runaway to

Table I. Tabulated data for results shown in Figs. 5–7.

Wh	Wh kg ⁻¹	Peak rate (W)	Peak runaway temperature (°C)	Enthalpy of runaway (kJ)	Material
3.5	44	2.20E + 00	271	13.9	LFP
8.3	32	4.33E + 01	321	15.0	LFP
8.3	32	1.63E + 02	348	25.4	LFP
8.3	32	7.51E + 01	331	23.7	LFP
64.0	71	2.62E + 03	353	150	LFP
96.0	92	7.11E + 03	414	271	LFP
96.0	92	6.27E + 03	414	272	LFP
122	85	3.02E + 03	366	303	LFP
122	85	5.82E + 03	365	275	LFP
14.3	312	1.48E + 04	682	20.1	NCA
7.1	156	7.43E + 03	651	16.7	NCA
10.7	234	1.11E + 04	765	22.2	NCA
98.0	104	3.15E + 04	476	254	NCA
20.0	22	4.20E + 01	318	155	NMC
20.0	21	1.40E + 01	277	128	NMC
42.0	42	9.70E + 01	300	117	NMC
42.0	42	8.65E + 03	299	148	NMC
42.0	42	3.42E + 01	295	165	NMC
65.1	57	3.35E + 03	338	189	NMC
65.1	57	3.28E + 03	328	194	NMC
12.8	6	3.77E + 00	238	40.5	LMO
12.8	6	2.72E + 00	237	38.7	LMO
25.6	13	3.92E + 00	239	79.7	LMO
25.6	13	4.25E + 00	248	117	LMO
38.4	19	2.21E + 01	262	127	LMO
38.4	19	2.43E + 01	267	117	LMO
51.2	27	8.80E + 01	285	140	LMO
51.2	27	7.33E + 01	283	154	LMO
58.0	29	6.07E + 02	300	164	LMO
58.0	29	4.09E + 02	297	168	LMO

exceed any heat dissipation to the environment, likely leading to more severe consequences in terms of further damage or cascading failure. This would be considered intuitive if discussing chemical energy storage but is a concept often avoided when considering electrochemical energy. As new technologies are developed with increased energy in mind, increasing attention will need to be paid to designing mitigation into systems that minimize consequences.

The overall energy released during thermal runaway in this work scales quite well with the stored energy; however, during a practical thermal runaway there will also be other concerns not evaluated here, including the significant energy available from inactive materials. The combustion of the electrolyte and its decomposition products can be a significant contributor if the thermal runaway process is energetic enough to provide an ignition source. Plastic packaging may play a role as well. Faster rates of heat release and higher peak runaway temperatures associated with higher energy densities observed here will be more likely to ignite these inactive materials. The potential for fire and the heat it generates may be of particular importance when considering system-level safety, as it provides a means beyond the exothermic failure of the active materials to initiate runaway in other cells, driving a propagating battery failure.

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ORCID

Joshua Lamb  <https://orcid.org/0000-0001-8426-0122>
 Loraine Torres-Castro  <https://orcid.org/0000-0002-9267-8489>
 John C. Hewson  <https://orcid.org/0000-0003-4053-5774>
 Randy C. Shurtz  <https://orcid.org/0000-0002-2742-0334>
 Yuliya Preger  <https://orcid.org/0000-0001-8558-2529>

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Failure propagation in multi-cell lithium ion batteries

Joshua Lamb*, Christopher J. Orendorff, Leigh Anna Steele and Scott Spangler

Advanced Power Sources R&D, Sandia National Laboratories

*Corresponding author: (O) 505-284-9709; (F) 505-844-6972; jlamb@sandia.gov

Abstract

Traditionally, safety and impact of failure concerns of lithium ion batteries have dealt with the field failure of single cells. However, large and complex battery systems require the consideration of how a single cell failure will impact the system as a whole. Initial failure that leads to the thermal runaway of other cells within the system creates a much more serious condition than the failure of a single cell. This work examines the behavior of small modules of cylindrical and stacked pouch cells after thermal runaway is induced in a single cell. Cylindrical cells are observed to be less prone to propagate owing to the limited contact between neighboring cells. The electrical connectivity is found to be impactful as the 10S1P cylindrical cell module did not show failure propagation through the module, while the 1S10P module had an energetic thermal runaway consuming the module minutes after the initiation failure trigger. Modules built using pouch cells conversely showed the impact of strong heat transfer between cells. In this case, a large surface area of the cells was in direct contact with its neighbors, allowing failure to propagate through the entire battery within 60-80 seconds for all configurations (parallel or series) tested.

Keywords: lithium ion safety; thermal runaway; failure propagation; battery abuse; multi cell

1. Introduction

Studies on the safety of lithium ion batteries (LIB) have long focused on the impact and aftermath of the field failure of a single cell. This has been driven by the fact that LIB have traditionally been used for small devices where 1) failure of a single cell would have little impact beyond the device and its user, and 2) the battery is unlikely to see a truly abusive condition under normal use. As LIB are considered for larger systems, including vehicle electrification and electric grid applications such as

energy storage and smart grid applications, the impact of the failure of single cells and small groups of cells must be reexamined. Recent incidents have seen thermal events that have eventually consumed entire battery systems, stemming from myriad initial causes including mechanical intrusion [1], overheating [2] and overvoltage/overcharging. [3] Not only are the causes of failure becoming more diverse, but the impact of these failures is increasing as well. However, few systemic studies have been performed to determine how a localized thermal runaway event may impact a battery system as a whole, regardless of the initial mode of failure.

The thermal runaway behavior of single lithium ion cells is well studied. [4-16] Typical responses include venting of battery gasses, ejection of cell contents, extreme temperatures and in some cases self-ignition of the cell or ejected battery materials. What is less well known is how these behaviors may impact a larger, more complex system. The failure of a single cell taken on its own may have little impact on the safety or performance of an electric vehicle system; however, the thermal and electrical impact on other cells in the system may be sufficient to cause a cascading runaway effect. In this scenario, the energetic thermal runaway of a single cell provides enough heat to neighboring cells within the battery to initiate thermal runaway in the neighbors. These cells then provide enough heat to chain the failure to their neighbors, continuing until the entire battery pack has been consumed. This worst-case scenario would result in a catastrophic release of energy within the confines of an electric vehicle causing significant damage and presenting a potentially dangerous situation for the operator. This possibility of propagation through a pack was modeled by Spotnitz et al. [16]. This work proposed that the likelihood of full battery pack failure was influenced by several factors, including the abuse response of the individual cells and the overall insulation of the pack. Particularly important, though, is the thermal contact to other cells, and they predicted that cells directly neighboring multiple other cells were more likely to cause a propagation through a battery pack.

The electrical configuration of cells may impact how failure propagates as well. Offer et al. [17] showed that even under normal conditions varying resistances of connections between cells within a battery module may impact the local temperature of a cell. It is common practice as well to use blocking and discharge diodes within large parallel battery packs to prevent self-discharge of the battery through a shorted cell. [18] However, the thermal separation between cells is often limited. Prismatic and pouch cells are often packed together either face to face or separated by thin plates used for active cooling. [19] Even if they are thermally separated the electrical connections themselves have been shown to provide a path for heat transfer between cells. [13]

Recent work exploring behavior of battery systems has largely been focused on long-term performance issues; [17, 19-24] however some information on failure propagation may be inferred. Much of the current handling of cell faults in battery packs involves the diagnosis and electrical handling of faulty cells within a system. Various methods exist for the detection of faulty cells, [21] and Kim et al. [20] described a method for electrically isolating faulty cells from the battery pack. The science of fault detection is still in its infancy, and the most reliable indicators of battery health are still voltage and temperature monitoring of cells. Unfortunately, when considering battery safety, changes in cell voltage or temperature are only symptoms of a different issue and are not indicators of a root cause. These indicators often lag a root cause, and by the time a significant temperature increase or voltage change is observed the cell is undergoing a thermal runaway event that is too late to arrest.

The work presented here examines the failure propagation behavior of small battery modules constructed with cylindrical 18650 cells and stacked pouch cells. The impact of electrical configuration (series vs. parallel) is evaluated as well. This will examine both the propensity of different constructions to have a propagating thermal runaway and the behavior of the propagation once it occurs. This provides a method for better understanding the potential impacts of a single cell failure on a larger battery system, as well as provides new data to inform the design of batteries.

2. Experimental Methods

Thermal runaway was initiated using a mechanical nail penetration. Previous work found that nail penetration parallel to the axis of cylindrical cells could be reliably used to create a hard internal short and thermal runaway for a given cell type. [25] Similarly, the same work observed that thermal runaway could be induced using nail penetration into the side of a stacked pouch cell. This provides a method for inducing thermal runaway within a single cell of a multi-cell battery module without adding any additional thermal or electrical energy to the cell.

Modules for failure propagation were constructed using commercially available cells. 18650 modules were constructed using Panasonic CGR18650CG cells with a nominal capacity of 2200 mAh. The 18650 test articles were constructed as 10 cell modules fully series (10S1P) and fully parallel (1S10P) configurations, with electrical connections made using 0.005" x 0.200" nickel ribbon. The cells were held together in a close module configuration. Thermocouples were attached to cells facing towards the center of the module. A schematic of the physical layout of the 18650 modules with thermocouple placements is shown in Figure 1.

The propagation tests on the 18650 test modules were performed by creating a hard shorting failure within the central cell (Cell 6) using mechanical nail penetration. The nail was inserted through the bottom of the cell can using a hydraulic press at a rate of 2 cm/second to a depth of 20 mm. The module was monitored for the propagation of the energetic failure through the remaining cells. Battery temperatures, module voltage and individual cell voltages of the 10S1P module were collected and evaluated.

Stacked pouch cell modules were constructed as 5 cell batteries using AA Portable Power Corp. model 7035130-10C 3,000 mAh cells. The modules were constructed in fully series (5S1P) and fully parallel (1S5P) configurations, with electrical connections made using 0.005 x 0.200" nickel ribbon. The cells were fixed together in a close packed, stacked orientation with the largest part of the cell face

directly in contact with its neighbors. Thermocouples were placed between each cell as well as on the outer faces of the module, and the module held together using 0.5" phenolic board as constraints. A schematic of cell layout and thermocouple placement can be seen in Figure 2.

The propagation test on the stacked pouch modules was performed by creating a hard short circuit condition within one cell using a sharp nail penetration. The nail was inserted into the target cell at 2 cm/second up to 20 mm. The central cell (Cell 3) and an edge cell (Cell 1) were failed in separate tests. The propagation of cell failure was monitored using temperature measurements, as well as cell voltage measurement of series modules.

3. Results and discussion

Table 1 details the configurations of the modules tested. The response of these cells to mechanical nail penetration and blunt rod indentation have been determined previously and are reported in reference [25]. It was observed in the previous work that nail penetration could be used to produce a repeatable thermal runaway event in the cells tested. Due to the difficulty and costs of performing destructive testing, the total number of tests performed is somewhat limited. While repeat tests of the data observed here were conducted, a deep statistical analysis featuring a large number of tests may yield different results.

Table 1. Cell and battery specifications for test articles used for propagation testing

Battery	Chemistry	Geometry	Configuration
2200 mAh 18650	LiCoO ₂ /Graphite	cylindrical	10S1P, 1S10P
3000 mAh pouch	LiCoO ₂ /Graphite	pouch	5S1P, 1S5P

3.1 Propagation Testing 10S1P and 1S10P Cylindrical Cell Batteries

3.1.1 10S1P

Figure 3 shows the temperature response of the 10S1P propagation test initiated at Cell 6. Cell 6 goes into thermal runaway and self-ignites with a peak temperature of 360 °C (initiated at 265 seconds in Figure 3). The sustained fire causes an initial temperature rise in all of the thermocouples on the cells

with the exception of Cell 10 which has a thermocouple that is sufficiently well separated from the fire. Approximately 15 seconds after the initiation, an electrolyte fire ignites from electrolyte that had leaked from Cell 6 which caused a more sustained temperature increase in the Cell 2, 3 and 9 thermocouples but no evidence of thermal runaway in those cells. Several cells audibly vent during this test, but there is no evidence of thermal runaway in any cell other than Cell 6.

The module and cell voltage responses of the 10S1P battery to the propagation test are shown in Figure 4. After the penetration of Cell 6, the voltages of Cells 1, 2, 3, 5 and 7 also drop but recover during the test with the exception of Cell 1. The Cell 8 voltage is also very noisy after the initial Cell 6 failure, but settles out over time. The noise in voltage channels could be attributed to heating from the initial fire that ignited after the Cell 6 failure. It is interesting to note that Cell 1 voltage is most affected by the Cell 6 failure and not an adjacent cell (5 or 7), but there is no evidence of thermal runaway of Cell 1. Figure 5 shows a picture of the battery completely intact post-test. Thermal runaway failure initiated at Cell 6 clearly impacts the measured voltage of Cell 1, but no thermal runaway propagation to other cells is observed.

Ultimately, while the initial runaway of Cell 6 generates a significant amount of heat, the thermal conductivity between neighboring cells is relatively low. Firstly, even in a closely packed geometry such as that used here, there is a significant air gap between the cylindrical cells. Further, any shorting that occurs within the battery in a fully series configuration will not impact the general operability of the other cells; the battery module could conceivably still be operated albeit at a lower voltage to account for the missing cell.

3.1.2 1S10P

Figure 6 shows the cell skin temperature, and Figure 7 shows the battery voltage during the 1S10P propagation test. Failure is initiated at Cell 6 which, results in self-ignition and relatively small sustained electrolyte fire. This sustained electrolyte fire continues as the other cells vent and leak

electrolyte over the course of several minutes. While there are elevated temperatures recorded by the thermocouples on the skin of each cell there is no evidence of thermal runaway at times < 400 s. Module voltage is lost at ~200 seconds (Figure 10). At approximately 420 seconds, Cells 2 and 9 go into an energetic thermal runaway and that failure quickly propagates through the rest of the battery (approximately 290 s after the initiation at Cell 6). Skin temperatures of the cells measured during the runaway are between 600-900 °C, with some thermocouples reading saturation at 1270 °C (likely destroyed in the fire). Figure 8 shows the significant damage to the battery post-test. Unlike the 10S1P configuration, the failure of Cell 6 propagates completely through the 1S10P battery.

This shows a significantly different result from the 10S1P module, with a propagating failure that is able to eventually consume the entire module. While the geometry of the module is unchanged there are some potential impacts from the change in electrical connectivity. Firstly, the electrical connections themselves provide a conductive path to other cells in the module; while in the series configuration the electrical conductors only provide a path to the cells directly before and after Cell 6 in the string. Therefore, the parallel configuration provides a path for heat transfer from Cell 6 to all other cells in the module. Further, in a parallel configuration creating a short on an internal cell effectively creates a short circuit load at the point of failure. This creates additional heat generation from 1) the excessive discharging of cells within the module, 2) the flow of current through the bus material connecting the module together and 3) resistive heating at the point of failure itself. Wu et al. [23] and Offer et al. [17] showed that cells nearest the load point can discharge at a greater rate due reduced resistance between the cells and the load point, leading to increased heating of cells near the load point. The elevated temperatures created by the initial runaway also brought the module to a point where the runaway of any additional cell was likely to provide enough heat to send the remainder of the module into thermal runaway.

3.2 Propagation Testing 5S1P and 1S5P Pouch Cell Batteries

3.2.1 5S1P

The propagation test of the 5S1P pouch cell battery is initiated by a nail penetration at the edge of Cell 3 (center cell). Thermocouples are placed between cells (labeled C1-2 for the thermocouple between Cells 1 and 2) and on the outside of the ends of the battery (Cells 1 and 5). Figure 9 shows the cell skin temperature and battery voltage as a function of time during the propagation test. Figure 10 shows the battery and individual cell voltages during the 5S1P propagation test. Nail penetration of Cell 3 results in a short circuit and thermal runaway with a sharp temperature rise of the C2-3 thermocouple and a loss in the Cell 3 voltage. The failure propagates outward from Cell 3 to Cell 2, Cells 4 and 1, and finally Cell 5 with a full thermal runaway of the battery over the course of approximately 60 seconds. Figure 11 shows a picture of the 5S1P battery post-propagation test.

Results from the pouch cell and cylindrical cell batteries in the series configurations are notably different. The failure quickly propagates completely through the pouch cell battery, but not in the cylindrical cell battery. This suggests that in the series pouch cell battery, propagation of failure is dominated by heat transfer from cell-to-cell because of the good thermal contact over the largest surface area of the cells.

With heat transfer through the surface area of the cells dominating the propagation process, initiation at the center of the battery is likely to be the most severe test condition. Failure propagation through the 5S1P pouch cell battery is also evaluated with initiation at the end of the battery (at Cell 1) which is expected to be a less severe condition. Figure 12 shows the cell skin temperature and battery voltage of the 5S1P propagation test initiated at Cell 1. Figure 13 shows the battery and individual cell voltages for this test. Nail penetration of Cell 1 results in a short circuit, loss of cell voltage and thermal runaway of Cell 1 where the skin temperature is measured to be $> 200\text{ }^{\circ}\text{C}$ on the outside of the cell (C-1) and $> 600\text{ }^{\circ}\text{C}$ at the inside face of the cell (C1-2). Just as observed for the Cell 3 initiation experiment,

failure propagates through the entire 5-cell battery when failure is initiated at Cell 1, resulting in full thermal runaway of the battery. The total propagation time is approximately 80 seconds, which is longer than observed for the propagation event when initiated at Cell 3. Since propagation takes place serially from one end of the battery to the other, it is rational to expect the duration of the propagation event to be longer than if initiation is triggered in the center of the battery. Even for initiation at the end of the battery, the heat transfer through the contact surface area between cells is still sufficiently high to cause the failure to propagate completely through the 5S1P battery. Figure 14 shows the remains of the battery after the 5S1P test initiated at Cell 1.

The 5S1P module with initial failure at Cell 1 provides an opportunity to examine how temperature propagates through the module, as the propagation of failure occurs entirely in one direction and is not impacted by cells discharging through the created short circuit. The cell average temperatures are determined as the simple average of the temperatures measured at each cell face and are profiled in Figure 15. This shows the rough temperature distribution through the module first as a result of the initial failure, then as the failure propagates through the cell. Cell 1 can be seen increasing to 285 °C in the first 10 seconds, elevating Cell 2 with it. At 20 seconds Cell 1 reaches its peak temperature of 403 °C, while Cell 2 reaches a high enough temperature to likely begin self-heating. At this point as well temperature rise is observed in Cell 3. By 30 seconds, full runaway is apparent in Cell 2 as it has exceeded the temperature of the initial cell runaway, peaking by 40 seconds after the initial failure. Cell 3 has heated significantly by this point, and by 50 seconds in shows signs of runaway itself, also beginning to elevate the temperature of cell 4 significantly. After 60 seconds Cell 3 has reached its peak temperature of 630 °C and Cell 4 is over 300 °C as well. Cell 4 continues to heat reaching a peak of ~640 °C after 80 seconds, at which point Cell 5 has reached 340 °C. By 100 seconds Cell 5 begins to cool, signaling the end of thermal runaway. These profiles make apparent that when thermal conductivity between cells is sufficiently strong a propagating thermal runaway can travel through a module through

the generated heat alone. Another observation of note is that the maximum temperature reached by each cell increased as the runaway progressed through the battery (except for Cell 5, which was bounded by the inert constraint). This demonstrates how involving more and more cells in a propagating failure will increase not only the total energy involved in the event, but can also increase the acute severity as the cells reach temperatures as part of the propagating failure that they would not under an individual runaway event.

3.2.2 1S5P

Pouch cell battery failure propagation is also evaluated for batteries in the 1S5P configuration, where failure is initiated by a nail penetration at the center of the battery (Cell 3). Figure 16 shows the cell skin temperatures and battery voltage for the 1S5P propagation test. As observed in the 5S1P experiments, failure propagates completely through the 1S5P batteries. Again, the thermal contact over the large surface area between the cells dominates the propagation mechanism as opposed to electrical connectivity. The data from the 10S1P and 15S10P 18650 modules suggest that the parallel configuration would have a much more aggressive propagating failure. However, the propagation times through both batteries are comparable (approximately 50-60 seconds).

The primary difference observed between the 18650 and stacked pouch modules is that in this case the cells have a large area in direct contact with neighboring cells. Here, the thermal conductivity between neighboring cells is so strong that it overwhelms any impact the differing electrical connection may have. This indicates that poor insulation between cells would negate any safety features a battery may have to eliminate failure propagation, particularly for small, tightly packed modules.

4. Conclusions

This work examines the failure propagation behavior on differing cell types and electrical configuration. Cylindrical cells, even in a close pack configuration, have limited thermal contact between neighboring cells with significant air gaps present that limits the heat transfer between cells during

thermal runaway. In this case, the impact of the electrical connections becomes more pronounced. Here, a parallel configuration leads to stronger propagation through the cylindrical cell module due both to heat transfer along the electrical connections as well as electrical shorting of the module through the initiated cell. It is important to note that in conventional battery system design, one strategy to mitigate the issue of cell shorting is through the use of blocking and discharge diodes to prevent unwanted current flow. However, the increased heat transfer through the parallel configuration would not be mitigated through the use of blocking diodes.

The testing of stacked pouch cells demonstrates the impact when the heat transfer between neighboring cells is strong. This shows that with strong heat transfer between modules the impact of cell heating dwarfs any impact the electrical configuration may have, as **thermal runaway propagates through the module at the same pace regardless of the electrical configuration**. Initiation of runaway on the edge cell also gives a glimpse of how a propagating thermal runaway can compound the intensity of the runaway as it progresses through the module, as peak cell temperatures observed increase with each interior cell that goes into thermal runaway. The stacked pouch module data shows the limitations of mitigations built into the electrical system, as safeguards to block short circuit currents would have little impact in this case. This shows the **need for engineering strategies to prevent the thermal interactions of cells during a runaway event**, as well as electrical interactions, to prevent a catastrophic failure of a battery.

Future work in this area will continue to evaluate failure propagation using other experimental initiation triggers, studying different cell types, sizes, and chemistries, evaluating more sophisticated battery designs (with passive and active controls), and to simulate the propagation events for selected battery types and configurations through models.

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Figures

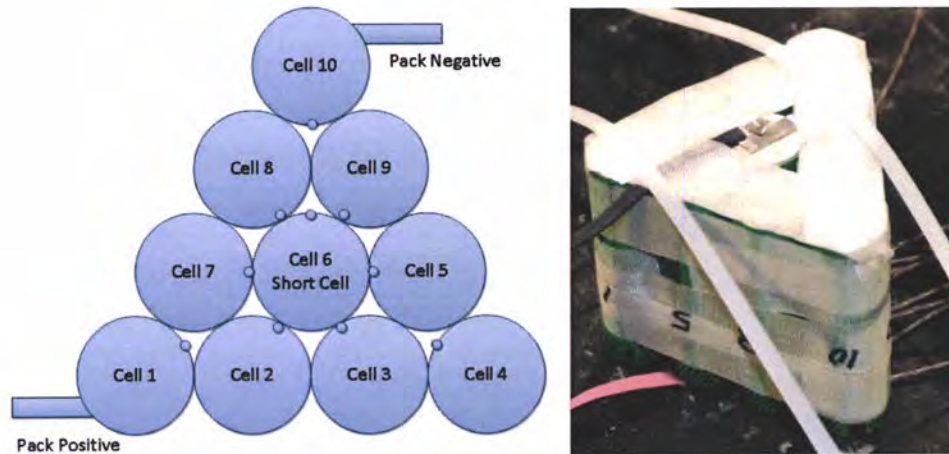


Figure 1. Diagram showing arrangement of 18650 modules and thermocouple placement.

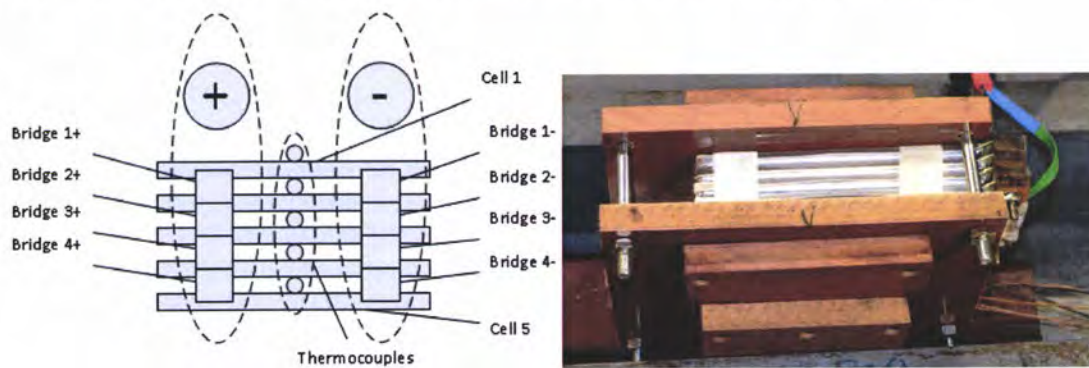


Figure 2. Diagram showing stacked pouch cell parallel module with bridge and thermocouple placement.

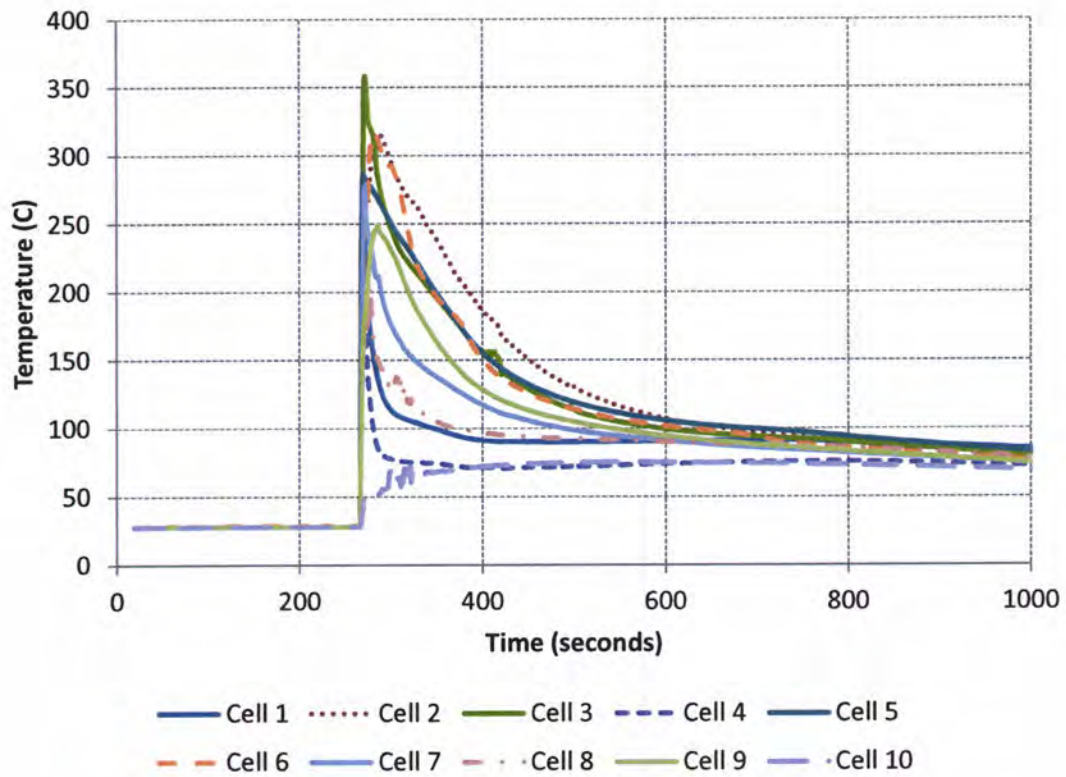


Figure 3. Cell skin temperature as a function of time during the 10S1P propagation test.

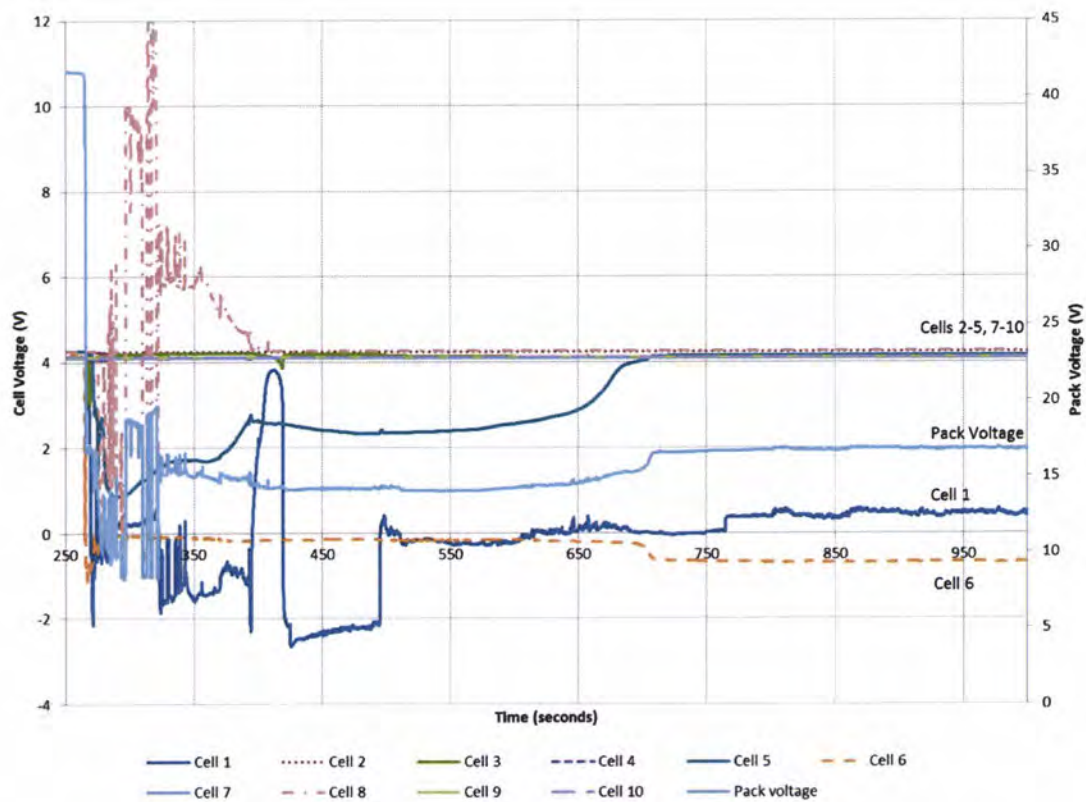


Figure 4. Cell and battery voltage as a function of time during the 10S1P propagation test.



Figure 1. Photograph of the 10S1P battery post-propagation test showing the penetration of Cell 6.

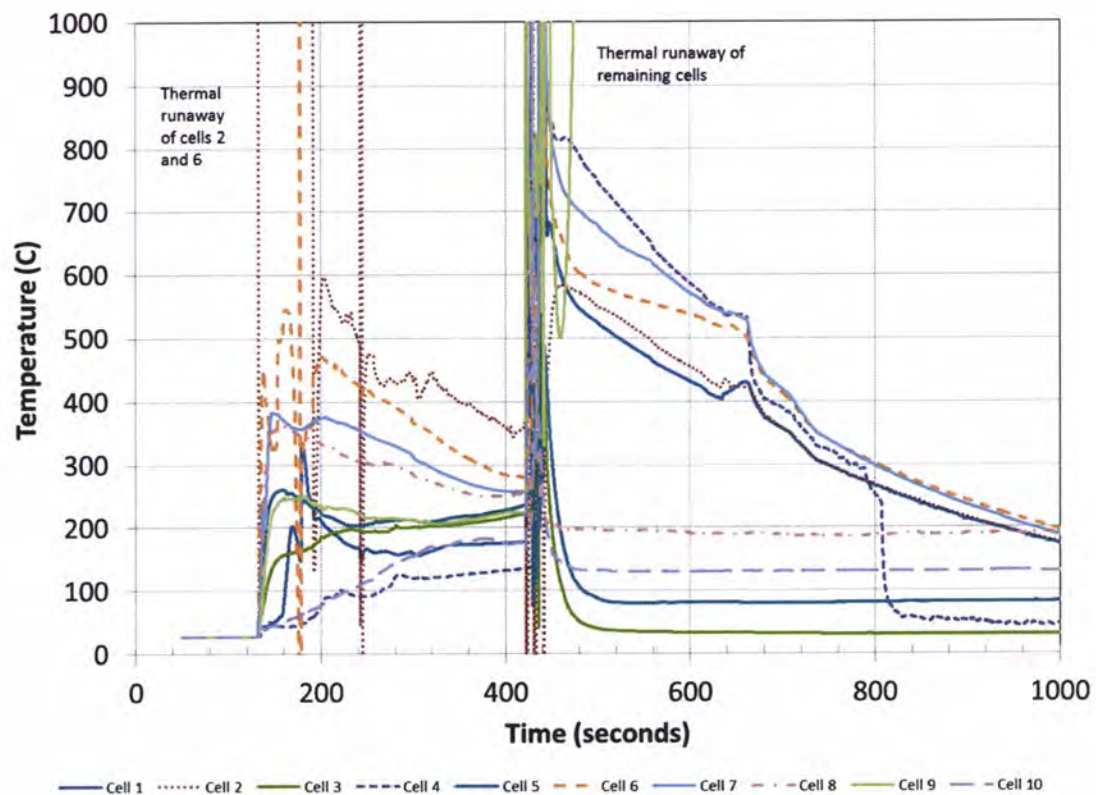


Figure 2. Cell skin temperature as a function of time during the 1S10P propagation test.

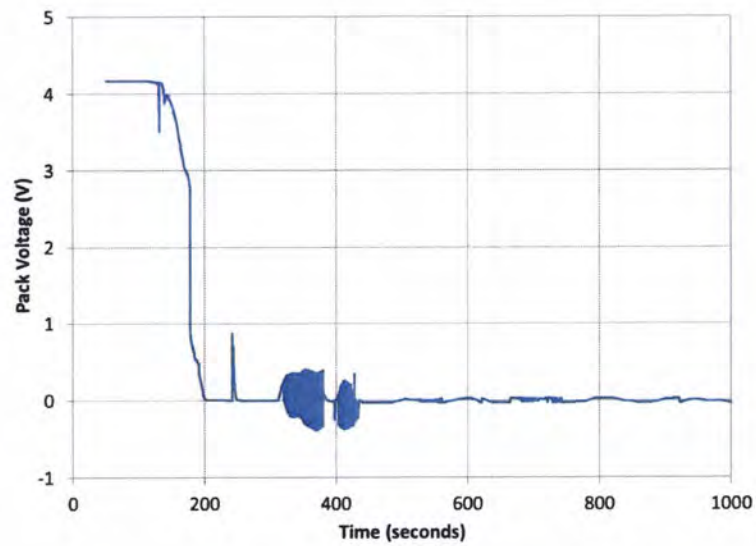


Figure 7. Battery voltage as a function of time during the 1S10P propagation test.



Figure 8. Photograph of the 1S10P battery post-propagation test.

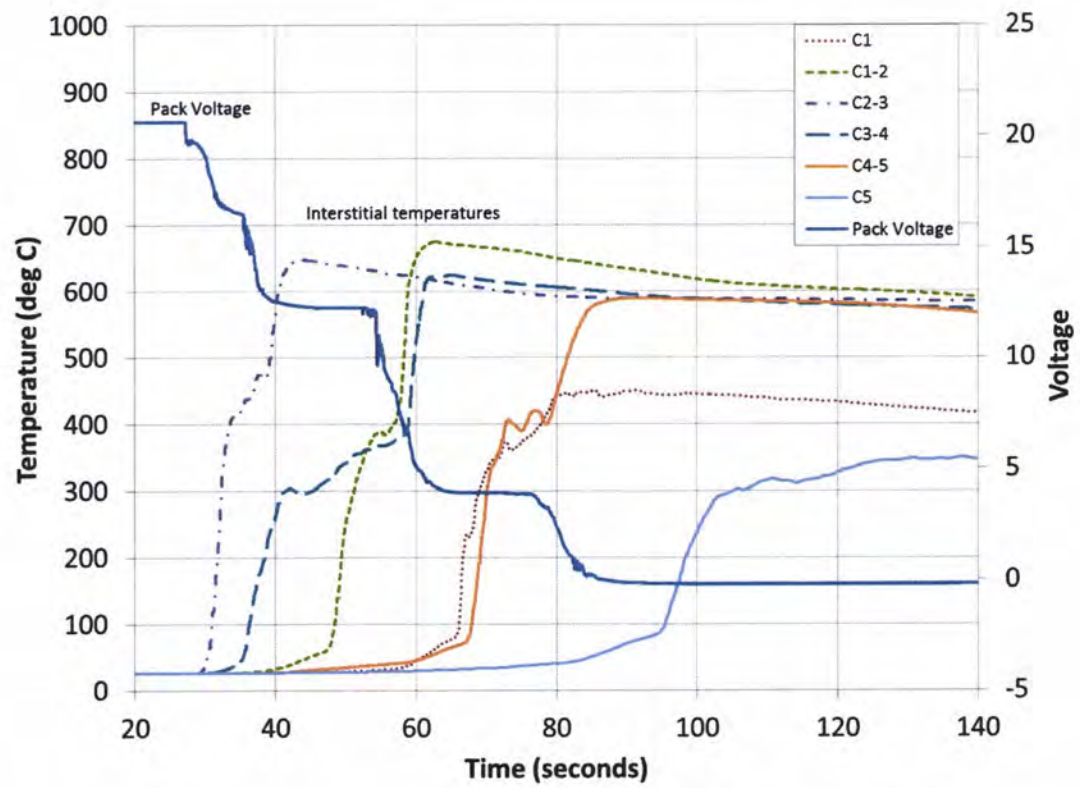


Figure 9. Cell skin temperature and battery voltage as a function of time during the 5S1P propagation test initiated at the center cell (Cell 3).

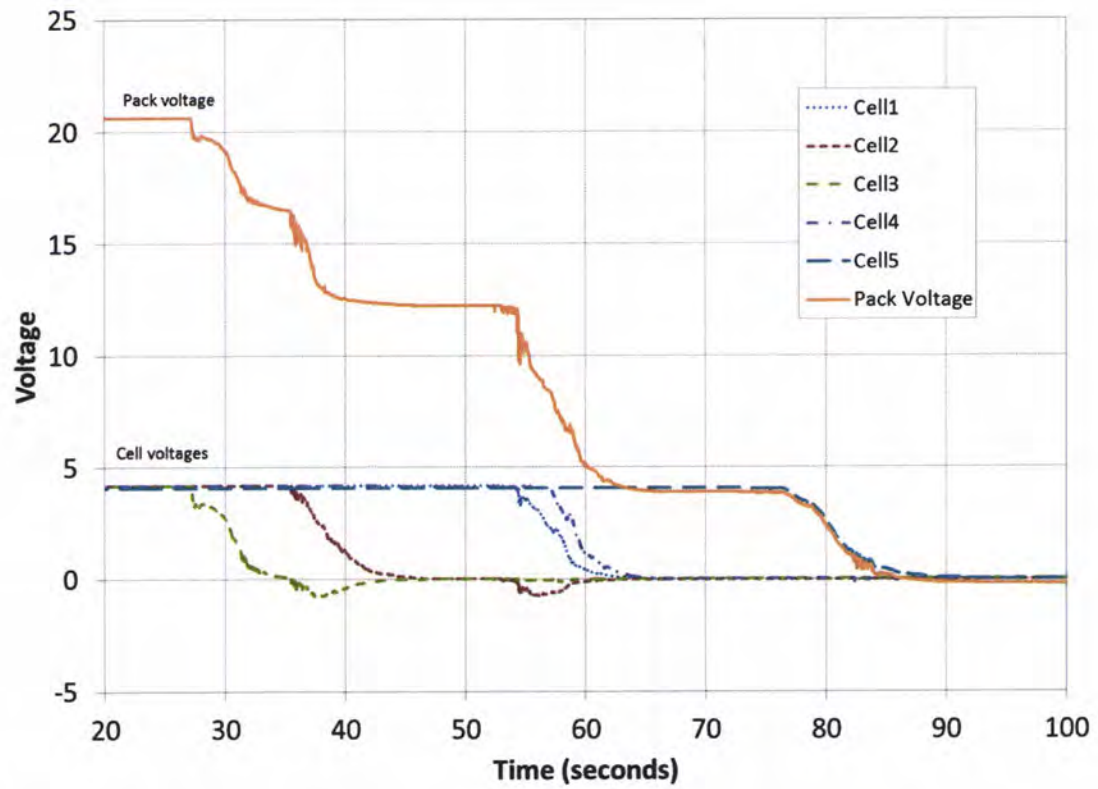


Figure 10. Battery voltage and cell voltages during the 5S1P propagation test initiated at the center cell (Cell 3).



Figure 11. Photograph of the 5S1P battery post-propagation test initiated at the center cell (Cell 3).

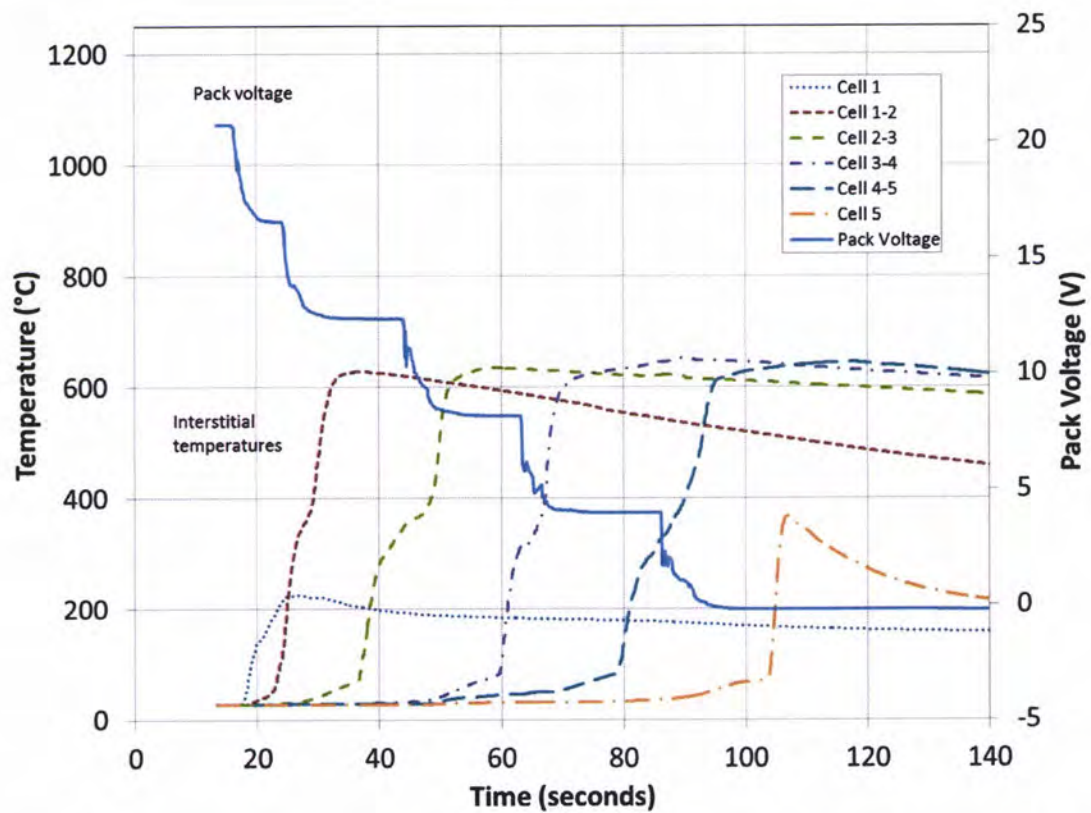


Figure 12. Cell skin temperature and battery voltage as a function of time for the 5S1P propagation test

initiated at Cell 1.

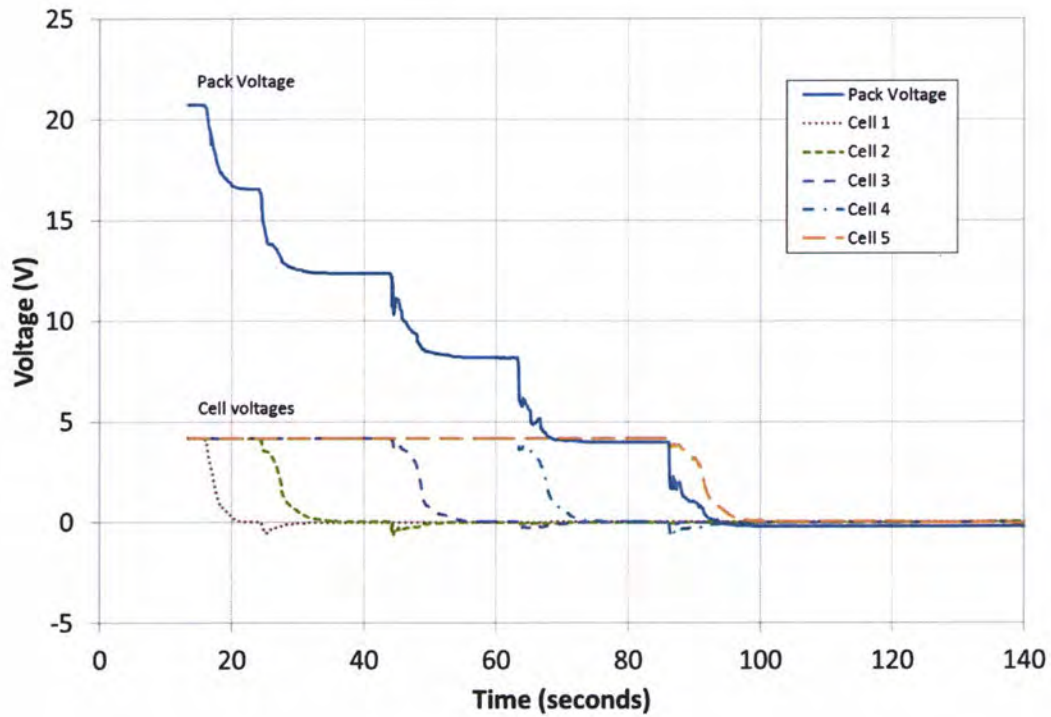


Figure 13. Battery and cell voltages for the 5S1P propagation test initiated at Cell 1.



Figure 14. Photograph of the 5S1P battery post-propagation test initiated at Cell 1.

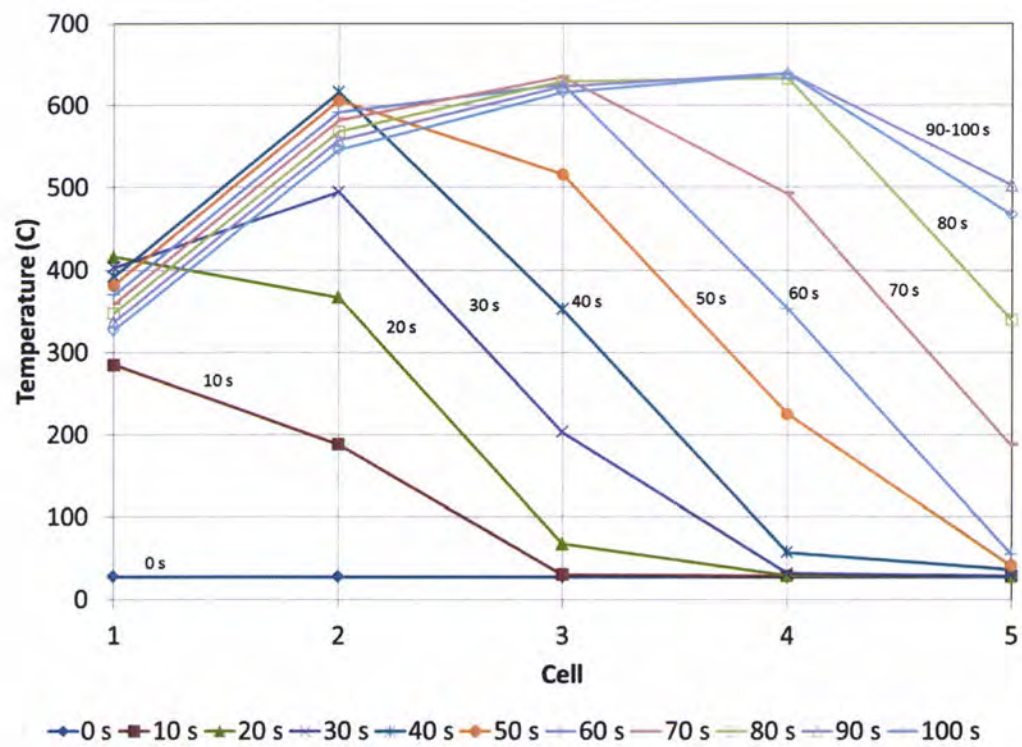


Figure 15. Temperature profile of cell average temperatures at 10 second intervals for the 100 seconds following the initial induced runaway of Cell 1.

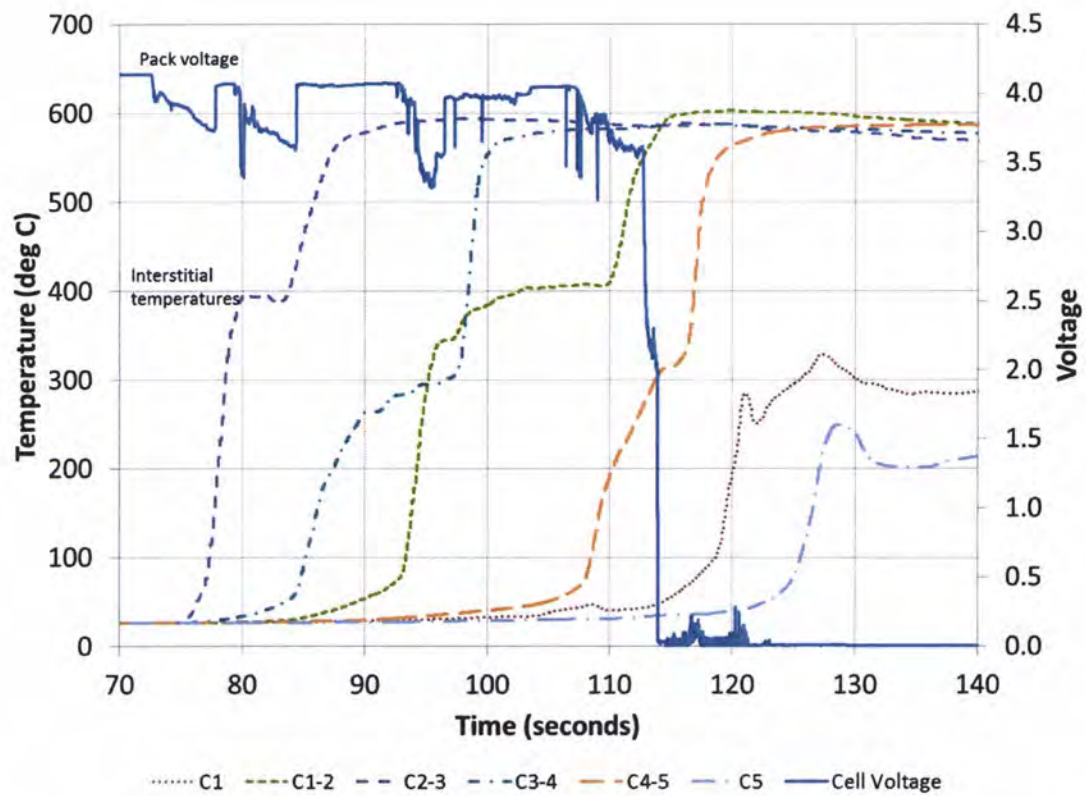


Figure 16. Cell skin temperatures and battery voltage for the 1S5P propagation test initiated at Cell 3.

Table 1. Cell and battery specifications for test articles used for propagation testing

Battery	Chemistry	Geometry	Configuration
2200 mAh 18650	LiCoO ₂ /Graphite	cylindrical	10S1P, 1S10P
3000 mAh pouch	LiCoO ₂ /Graphite	pouch	5S1P, 1S5P

EXHIBIT 8

CHURCHILL COUNTY AUGUST 12, 2026 AGENDA PACKET SAND CREEK SUBDIVISION #2, PHASE 1 (PC26-10) SERVICES AND INFRASTRUCTURE COMPARISON

Supporting Evidence Relevant to Ground IV - ZC26-2

Official source and same-meeting context. These pages are reproduced from the same official Churchill County Planning Commission agenda packet dated August 12, 2026 that contained ZC26-2. The agenda identified Sand Creek PC26-10 as New Business Item 8.C and ZC26-2 as Item 8.E.

Purpose. Ground IV uses Sand Creek for a limited evidentiary comparison. The point is not that a final subdivision map and a zoning-map amendment are governed by identical legal standards, or that Rivian was required to submit subdivision-level engineering. The comparison shows that, within the same County packet, staff evaluated services and infrastructure through concrete planning-level facts while recognizing that later civil improvement plans and construction details could remain outstanding.

What the County evaluated. The Sand Creek staff analysis addressed access for police and fire; water, sewer, drainage and utilities; County water/sewer service; an Intent/Will Serve letter; water-right dedication/payment; fire-department water-system standards; power and telecommunications availability; infrastructure construction/bonding; traffic generation and a future turn lane; public-facility/service adequacy; road and utility maintenance funding; and later civil-improvement/infrastructure requirements.

Important distinction. Sand Creek PC26-10 was a final subdivision-map application implementing an already-approved tentative map and was reviewed under subdivision/conditional-approval standards. ZC26-2 is a zoning-map amendment governed by CCC §16.08.060(E). This exhibit therefore does not argue that the Sand Creek conditions or evidentiary requirements automatically apply to ZC26-2. It supports only the narrower Ground IV proposition that planning-level evaluation of service and infrastructure adequacy can be based on factual information without requiring every final engineering detail to be complete.

Scope. The exhibit includes the complete contiguous County staff-report/analysis segment for PC26-10 (original packet pp. 75-82) and the complete contiguous applicant-engineer response to the prior Sand Creek conditions relevant to phased infrastructure (original packet pp. 111-116). This preserves favorable, limiting, and contextual material rather than isolated excerpts.

Highlighting. Yellow highlighting is a navigation aid only. Original packet page numbers and surrounding County/applicant text are preserved.



Churchill County Agenda Report

Date Submitted: July 8, 2026

Agenda Item #: New Business -
Meeting Date Requested: August
12, 2026

To: Planning Commission

From:

Subject Title: Consideration and possible action re: A final subdivision map for Sand Creek #2, Phase 1, PC26-10, filed by Casey Road LLC. The property is south of Casey Road, Assessor's Parcel Numbers 008-792-11 and 008-792-95, in the R-1 zoning district. The applicant submits Phase 1 final subdivision map to implement the tentative map that was approved by the Board of County Commissioners on November 10, 2025 and to create 25 lots.

Type of Action Requested: Recommend approval to the Board of County Commissioners

Does this action require a Business Impact Statement? No

Recommend Board Action: Based on the information provided in the application, in the staff report, and heard tonight, I move to find that the purpose and findings for the division of land and imposing conditions outlined in CCC 16.12.010 and 16.04.050 have been met for subdivision, PC26-10, to implement the first phase of an approved tentative subdivision and create 25 new parcels at Assessor's Parcel Numbers 008-792-11 & 008-792-95, and therefore recommend the Board of County Commissioners approve with conditions the subdivision application.

Discussion: Executive Summary

Staff Recommendation: Approve with Conditions

Request

The applicant is requesting to implement the first phase of an approved tentative map. This phase proposes 25 parcels and the associated infrastructure and improvements. The tentative map was approved by the Board of County Commissioners on November 10, 2025.

Recommended Conditions of Approval

Based on code requirements and issues raised during review of the project, the following conditions of approval are recommended to be included with an approval:

1. Conditions required prior to recordation:
 - a. Any final changes required by the County Surveyor shall be made prior to recording.
 - b. Applicant shall sign a Maintenance Agreement as required under CCC 16.16.010.7(B)3.
 - c. Applicant shall obtain Civil Improvement Plan approval from the Director of Public Works.
 - d. Applicant shall obtain a Will Serve letter from Churchill County for each lot.

The submission of this agenda report by county officials is not intended, necessarily, to reflect agreement as to a particular course of action to be taken by the board; rather, the submission hereof is intended, merely, to signify completion of all appropriate review processes in readiness of the matter for consideration and action by the board.



Churchill County Agenda Report

e. Applicant shall either construct or bond the required improvements as required under CCC 16.12.030.3(A).

f. Applicant shall obtain variances for lot size and minimum lot width for lot 15.

g. Applicant shall pay the Payment in Lieu of Water Rights dedication fees for at least 25 parcels in accordance with CCC 13.02.010(G)3.

h. Applicant shall create a Government Improvement District (GID) for streetlights and preventative maintenance of the roads.

i. Applicant shall complete the abandonment of the 50ft roadway as outlined under AE26-4 (pending).

Alternatives: Recommend denial of the application or make changes as needed.

Fiscal Impact:

Explanation of Impact:

Funding Source:

Prepared By: Diane Moyle, Administrative Assistant

Reviewed By: _____
Randy Hines, Public Works Director

Date:

Board Action Taken:

Motion: _____

1) None _____

Aye: _____

2) None _____

Nay: _____

(Vote Recorded By)

The submission of this agenda report by county officials is not intended, necessarily, to reflect agreement as to a particular course of action to be taken by the board; rather, the submission hereof is intended, merely, to signify completion of all appropriate review processes in readiness of the matter for consideration and action by the board.



CHURCHILL COUNTY PUBLIC WORKS, PLANNING & BUILDING

Application:	Subdivision	Application #:	PC26-10
Request:	To implement the first phase of an approved tentative subdivision and create 25 new parcels		
Applicant:	Casey Road, LLC		
Owner:	Casey Road, LLC		
Site:	Assessor Parcel Numbers 008-792-11 & 95		
Master Plan//Zone:	Urbanizing // R-1		

Executive Summary

Staff Recommendation: Approve with Conditions

Motion for Findings

Based on the information provided in the application, in the staff report, and heard tonight, I move to find that the purpose and findings for the division of land and imposing conditions outlined in CCC 16.12.010 and 16.04.050 have **BEEN** met for **subdivision** PC26-10 to implement the first phase of an approved tentative subdivision and create 25 new parcels at Assessor Parcel Numbers 008-792-11 & 95, and therefore recommend the Board of County Commissioners **APPROVE WITH CONDITIONS** the **subdivision** application.

Request

The applicant is requesting to implement the first phase of an approved tentative map. This phase proposes 25 parcels and the associated infrastructure and improvements. The tentative map was approved by the Board of County Commissioners on November 10, 2025.

Findings

The following findings meet the purpose of CCC 16.12.010, Division of Land, and impose conditions under CCC 16.04.050, Conditional Approval. The proposed application:

- Preserves and protects the natural environment by protecting the land through limiting stormwater runoff, erosion, fire, flooding and pollution;**
Staff Comment: The proposed subdivision is not within a flood zone and shall have an approved drainage plan as conditioned below.
- Conserves agricultural resources;**
Staff Comment: The proposed subdivision is in a Single Family Residential (R-1) district and will not impact agricultural resources.
- Provides adequate open spaces through efficient design and development;**
Staff Comment: The proposed subdivision provides each property with private open space.
- Preserves topographic elements and features;**
Staff Comment: There are no topographical features requiring preservation.
- Facilitates through the orderly planning and subsequent development provision of police, fire, and other public services;**
Staff Comment: The proposed Wildcat Parkway and Eagle Canyon Road will provide access for police, fire, and other public services.
- Promotes the public health, safety and welfare by ensuring proper development that is consistent with and compatible with the existing community;**
Staff Comment: The proposed parcel size and density are consistent with neighboring communities.

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CHURCHILL COUNTY PUBLIC WORKS, PLANNING & BUILDING

7. Provides at the time of land division the proper infrastructure for water, sewer, drainage, and other utilities;

Staff Comment: The proposed subdivision will provide infrastructure for water, sewer, drainage, and other utilities to County specification as conditioned below.

8. Encourages the preservation and conservation of natural resources, including water, streams, hills, scenic areas, and open space; and

Staff Comment: The proposed subdivision will not impact existing streams, hills, scenic areas, or open space.

9. Conforms with the goals and objectives of the development code and Master Plan.

Staff Comment: The proposed subdivision conforms with the goals and objectives of the development code and the 16 identified Master Plan goals and policies, as conditioned below. The required variance for smaller lot sizes best balances safety and code compliance as the Right of Way (ROW) changes from 50ft to 60ft.

Recommended Conditions of Approval

Based on code requirements and issues raised during review of the project, the following conditions of approval are recommended to be included with an approval:

1. Conditions required prior to recordation:
 - a. Any final changes required by the County Surveyor shall be made prior to recording.
 - b. Applicant shall sign a Maintenance Agreement as required under CCC 16.16.010.7(B)3.
 - c. Applicant shall obtain Civil Improvement Plan approval from the Director of Public Works.
 - d. Applicant shall obtain a Will Serve letter from Churchill County for each lot.
 - e. Applicant shall either construct or bond the required improvements as required under CCC 16.12.030.3(A).
 - f. Applicant shall obtain variances for lot size and minimum lot width for lot 15.
 - g. Applicant shall pay the Payment in Lieu of Water Rights dedication fees for at least 25 parcels in accordance with CCC 13.02.010(G)3.
 - h. Applicant shall create a Government Improvement District (GID) for streetlights and preventative maintenance of the roads.
 - i. Applicant shall complete the abandonment of the 50ft roadway as outlined under AE26-4 (pending).

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Goal/ Policy	Text	Staff Comment
ED5.5	Require that new and expanded developments comply with Truckee-Carson Irrigation District (TCID) requirements to maintain the viability of delivery and drainage features.	The applicant has not rerouted or changed the existing 60ft irrigation easement.
PSF1.2.2	New service areas (including expansions) for public water utilities are only allowed in the Urbanizing and Industrial land use designations and may not overlap with other water utility service areas.	The proposed subdivision is within the existing County water service area.
PSF1.2.3	Development that is served by a centralized/community water utility must be located within the service area for the utility.	The proposed subdivision is within the existing County water system service area.
PSF1.14.1	Areas planned for urban or suburban development (residential densities greater than one unit per five acres or comparable non-residential development) will be served by a community water supply system. In accordance with adopted and existing County policies and ordinances, all new systems and facilities shall be dedicated to Churchill County.	The proposed subdivision is within the existing County water system service area and will be served by the County's water system.
PSF1.14.5	The cost of water service to new development shall be paid by the new development, and the cost of the service shall include extending service lines or facilities to the site.	The applicant shall build or bond the required water infrastructure prior to map recordation, as conditioned above.
PSF1.16	Require dedication of water rights to the County as outlined in the Churchill County Code. A plan approved by the County for the transfer, change in point of diversion, or change in use shall be outlined in sufficient detail to clearly state intended use.	The site does not have sufficient water rights. The applicant shall provide a Payment in Lieu of water rights prior to map recordation, as conditioned above.
PSF1.20	For proposed or existing development to be served by the County utilities, adequate land or rights-of-way shall be dedicated to public facilities. During the development review process, necessary easements, rights-of-way, and lands shall be made available for the installation, construction, and operation of public facilities and utilities.	The proposed map provides sufficient rights of way for dedication to ensure the installation, construction, and operation of public facilities and utilities.
PSF1.21	All planned unit developments and subdivisions shall be served by a centralized/community municipal water system.	The proposed subdivision shall be served by Churchill County's water system. Churchill County has provided an Intent to Serve letter for this site.
PSF1.22	Require all developments taking place near public water facilities to connect to them with limited exceptions.	The proposed subdivision shall connect to public water facilities.
PSF2.1.4	Development that is served by a public wastewater utility must be located within the service area for the utility.	The proposed subdivision is within the existing County sewer service area.
PSF2.2.1	All planned unit developments and subdivisions with residential densities of more than one unit per five acres shall be served by a community sewage treatment facility.	The proposed subdivision shall be served by the Churchill County sewer system.
PSF2.2.7	Require all developments taking place near public sewer facilities to connect to them with limited exceptions.	The proposed subdivision shall be served by the Churchill County sewer system.

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Exhibit 8 - Sand Creek PC26-10 - official Aug. 12, 2026 packet p. 81



CHURCHILL COUNTY PUBLIC WORKS, PLANNING & BUILDING

The proposed parcels range from 6,855sf to 15,813sf.¹ This matches the neighboring parcels which range from 7,013sf to up to 3 acres (130,680sf).

3) Protection of the public health, safety, and welfare

There are minimal public safety risks from the location of the subdivision. The proposed subdivision is not within a flood plain and there are no known fault lines within the subdivision. The geotechnical report identified sandy soils and sediments within the subdivision but did not have concerns over potential liquefaction.²

The proposed Wildcat Parkway and Eagle Canyon Road will provide access for police, fire, and other public services. The proposed roads meet Churchill County design standards. This ensures the public health, safety, and welfare.

The proposed 25 parcels increase the number of people in this dominantly residential area. According to the US Census, the average persons per household in Churchill County is 2.66. Therefore, this phase of development will increase activity and traffic by approximately 67 people. The full development may create an impact of approximately 479 people. The applicant's full subdivision traffic study shows an anticipated 1,688 daily trips. The traffic study recommended the creation of a left turn lane along Casey Road. The Director of Public Works determined that the left turn lane is not required until phase 2 of the subdivision. The current phase will have acceptable impacts to the welfare of neighboring properties.

4) That adequate public facilities and services are available to the development

The proposed parcels have access along the proposed Eagle Rock Road, Wildcat Parkway, and Big Horn Drive. Staff covered the potential traffic impacts and timing of the future Casey Road left turn lane in Section 3, above.

Sufficient power and telecommunications services are available along Casey Road. Parcels contain a 7.5ft wide PUE along the proposed road frontages, 5ft wide PUEs along side property lines, and a 5ft PUE and private drainage to provide utility access and drainage.³

Churchill County water and sewer will service the subdivision. Churchill County has provided an Intent to Serve letter for the subdivision. Payment in lieu of water rights dedication shall be made in accordance with CCC 13.02.010(G), as conditioned above. Staff notes that the geotechnical report found water intrusion may occur at depths of 6.5ft. This may impact the design of below grade utilities. An approved Civil Improvement Plan will be required prior to recordation of the final map, as conditioned above.

The proposed subdivision will have adequate public facilities and services, as conditioned above.

5) Findings of conformance with the goals and objectives of the Code and the master plan must be made in order to recommend approval and impose conditions

Broadly, the proposed subdivision meets the standards outlined under Churchill County code. However, there is an exception where Eagle Rock Road transitions from the old 50ft ROW

¹ Please note that 1-acre equals 43,560sf.

² Liquefaction describes an event during an earthquake where normally solid ground behaves like a liquid.

³ PUE stands for Public Utility Easement.

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June 18, 2026

Randy Hines
Public Works Director
Churchill County
155 N. Taylor Street, Suite 153
Fallon, NV 89406

Subject: Sand Creek Subdivision #2, Phase 1
Tentative Subdivision Map PC25-8

Dear Mr. Hines:

The following are responses to the Conditions of Approval for Sand Creek Subdivision #2, Phase 1 as it applies to the Tentative Subdivision Map application for the Sand Creek Subdivision #2 (PC25-8).

COUNTY ENTITY

- 1) The Tentative Subdivision Map shall be updated within 60 days to reflect requirements of these conditions of approval to the satisfaction of county Department Heads. Disputes shall be resolved by recommendation of the Planning Commission and approval by the BOCC. When done, the Tentative Map shall be printed on mylar and appropriately signed. Failure to update materials in a timely manner may require reconsideration by recommendation of the Planning Commission and approval by the BOCC.
- 2) Phasing of the project shall progress according to the phasing plan. A table of phase improvement sequencing shall be included on the revised Tentative Map, with the following improvement requirements:
 - a. With the filing of the mylar addressing all corrections, the property at the intersection of Allen Road and Birch Lane shall be dedicated to the county to accommodate road and intersection improvements.
 - b. Improvements interior to the phase shall be provided with the phase. Improvements exterior to the phase that are needed for the phase to function as determined by the Director shall be provided with the phase.

To be coordinated with Client

All interior subdivision improvements are included for Sand Creek Subdivision #2, Phase 1.

Sand Creek Subdivision #2, Phase 1 consists of 25 lots accessed primarily from Casey Road. Per "Trip Generation Comparison Letter for Sand Creek" dated July 24, 2025, prepared by GCW, Inc., exterior improvements in the form of a southbound left turn pocket from Casey Road into Wildcat Road is recommended to serve the Sand Creek Subdivision. In an email letter from Randy Hines, Churchill County, Public Works Director, dated April 1, 2026 (attached), construction of the left turn pocket may be deferred to Phase 2 of Sand Creek Subdivision #2. (Please note that a Road Name

Build for people. Work with purpose. Design to last.

L:\LAProj\12144.001 - Sand Creek Phase 1 Final Map\3-Design\SUBMITTAL DOCS\12144001-Response to Tent Map Conditions.docx

Application has been submitted for Sand Creek Subdivision #2 to change the name of Wildcat Parkway to Sand Creek Drive.”)

- c. With each phase, streets shall be provided with street lighting meeting Churchill County Standards, with locations at intersections and pedestrian crossings at a minimum.
Street lighting is shown on the street improvement plans for Sand Creek Subdivision #2, Phase 1.
 - d. The Phase 1 shall include the establishment of a financial arrangement for road maintenance (including stormwater, street lighting, and power costs) that is acceptable to the county. This can include a Special Assessment District, homeowners association, or other alternative.
To be coordinated with Client
 - e. Phase 1 shall include the recommended turning improvements at the Wildcat Parkway/Casey Road intersection, as described in the updated traffic study letter and determined to be needed by the Road Supervisor.
Sand Creek Subdivision #2, Phase 1 consists of 25 lots accessed primarily from Casey Road. Per “Trip Generation Comparison Letter for Sand Creek” dated July 24, 2025, prepared by GCW, Inc., a southbound left turn pocket from Casey Road into Wildcat Road is recommended to serve the Sand Creek Subdivision. In an email letter from Randy Hines, Churchill County, Public Works Director, dated April 1, 2026 (attached), construction of the left turn pocket may be deferred to Phase 2 of Sand Creek Subdivision #2. (Please note that a Road Name Application has been submitted for Sand Creek Subdivision #2 to change the name of Wildcat Parkway to Sand Creek Drive.”)
 - f. Phase 5 shall include the extension of Wildcat Parkway through the county’s sewer lift station property to Birch Lane, the extension of Dixie Drive and its canal crossing, improvements to the Wildcat Parkway/ Birch Lane intersection, and associated pedestrian improvements determined to be needed by the Road Supervisor.
Not applicable to Phase 1.
- 3) A variance must be obtained before the first Final Map is recorded to waive the “minimum average width” standard for the subdivision. All lots must conform to all other lot layout standards. Conforming lots shall be shown on the revised Tentative Subdivision Map.
A variance application and letter of justification has been included in the final map application package for Sand Creek Subdivision #2, Phase 1
- 4) The depiction and labeling of any planned abandonment of existing road or utility easements, and the elimination any parcel lines shall be added to the revised Tentative Map to clearly illustrate and document such actions. The 50’ easements for roads and associated utilities shall be abandoned and replaced with 60’ rights-of-way for roads and associated utilities. All abandonment processes shall be completed before or concurrently with the Final Map approvals.
Abandonment of existing easements was documented on the approved Tentative Map.

- 5) The plan and timing for the handling of irrigation facilities, including all recommendations from TCID and BOR, shall be clearly indicated on the revised Tentative Map. All necessary permits for altering facilities shall be obtained during construction of improvements.

Not Applicable. Sand Creek Subdivision #2, Phase 1 does not intersect irrigation facilities.

- 6) The plan for the handling of roads shall be provided on the revised Tentative Map. It shall clearly state what is to be built. Roads shall be built to county standards, with any portions that do not have a county standard designed to a special standard approved by the Director. It shall clearly state what is to be offered for dedication to the county. This can be done in general notes or on each road label.

Road sections for Sand Creek Subdivision #2, Phase 1 meet Churchill County standards for width and dimensions. The geotechnical investigation recommends a thicker paving section, which is reflected in Details 125 and 125A on Sheet C5.3. Public rights-of-way are indicated on the final map for Sand Creek Subdivision #2, Phase 1. Construction of infrastructure to Churchill County standards was also addressed in General Note 8 of the approved tentative map for Sand Creek Subdivision #2.

- 7) The recommendations of agencies that submit comments shall be incorporated into the Tentative Subdivision Map, as determined by the Director.

There are no comments from other agencies.

- 8) Changes shall be made to the revised Tentative Map for compliance with Churchill County Code, including but not limited to:

- a. Changes to labels on road easements and improvements shall be made to be consistent with the county's decision on offers to grant easements and dedicate land and facilities.

The final map clearly addresses easements and dedications.

- b. All existing roads connecting to the project roads shall be shown on the map and provided with the easement and road dimensional information on the revised Tentative Map.

Connecting roads are shown on the revised Tentative Map for Sand Creek Subdivision #2 and on the plat for Sand Creek Subdivision #2, Phase 1.

- c. All proposed roads shall have the easement/right-of-way width, construction standard, and end of proposed road construction (where applicable) for each road clearly indicated on the revised Tentative Map.

Right-of-way widths are shown on the revised Tentative Map for Sand Creek Subdivision #2 and on the plat for Sand Creek Subdivision #2, Phase 1.

- d. Off-site road improvements shall be shown on the map or indicated in notes and shall reference the current traffic study update letter.

See response to comment no. 2.e. above. No offsite road improvements are included with Sand Creek Subdivision #2, Phase 1.

- e. Existing utility easements from previous maps and documents shall be shown on the map, and those that will be abandoned shall be labeled as such.

Existing easements are shown on the revised Tentative Map for Sand Creek Subdivision #2 and on the plat for Sand Creek Subdivision #2, Phase 1.

- f. Existing property lines that will be removed from the project shall be labeled as such.
Existing property lines to be removed are shown on the final map.
 - g. A note shall be placed on the typical lot layout diagram indicating that lots must provide for two parking spaces that do not rely on tandem (front to back) parking.
The typical lot layout is shown on Sheet C2.0, and a note regarding off-street parking was included.
 - h. Metes and bounds shall be provided for the project perimeter.
Project perimeter metes and bounds are shown on the Final Map.
 - i. The vicinity map shall be modified to improve readability.
The vicinity map on the Sand Creek Subdivision #2 Tentative Map was improved. Readable vicinity maps have been included on the Sand Creek Subdivision #2, Phase 1 plat and improvement plans.
 - j. North arrows and scale shall be included on all maps.
All plans include north arrows and scales.
 - k. The legend and map lines shall be modified to clearly distinguish lines for different purposes, including different utility lines, from project parcel lines.
Legends including map lines are included on the Sand Creek Subdivision #2, Phase 1 plat and improvement plans.
 - l. Add a phasing improvements sequence table to Sheet 1, consistent with conditions of approval.
Phasing was included on the revised Sand Creek Subdivision #2 Tentative Map.
 - m. Add statement of intent regarding proposed deed restrictions, such as home associations, and other matters regarding common areas.
Sand Creek Subdivision #2, Phase 1 plat note 14 addresses homeowner associations and deed restrictions.
 - n. Add project density and percentage of land uses to the Project Information on Sheet 1.
Project density and percentage of land use was added to the Project Information on the Revised Tentative Map for Sand Creek Subdivision #2.
 - o. Provide TCID review number and review comments.
TCID review number is 25-018. The review comments are attached.
- 9) Any final changes required by the County Surveyor shall be made to the revised Tentative Map, including but not limited to the following:
- a. Labeling on the Sheet 1 map that displays phasing and other features.
Sand Creek Subdivision #2 Tentative Map labeling and phasing revisions were included on revised tentative map.
 - b. Accurate naming of the map as a merger and resubdivision, and reference to the legal description document name and number.

The plat for Sand Creek Subdivision #2, Phase 1 is described as a merger and resubdivision.

- c. Modify notes and labels to clearly identify irrigation structures and document their source.
Not applicable to Sand Creek Subdivision #2, Phase 1. Irrigation structures were documented on the approved Sand Creek Subdivision #2 Tentative Map.
 - d. Electronic signatures shall be made larger and more legible.
Electronic signature on Revised Tentative Map for Sand Creek Subdivision #2 is legible. Digital signatures on Sand Creek Subdivision #2, Phase 1 plat and improvements plans are of a legible size.
 - e. Basis of bearing line and monuments shall be clearly indicated.
Basis of bearing line and monuments were clearly indicated on Revised Tentative Map for Sand Creek Subdivision #2 and is also shown on the Sand Creek Subdivision #2, Phase 1 plat and improvement plans.
- 10) The improvement plans for off-site and on-site sewer and water infrastructure shall be designed to county standards. In addition:
- a. Existing water and sewer lines lying outside the project that need to be upgraded to serve the project shall be completed at the developer's expense, as determined necessary by the Public Works Director.
Per Randy Hines, this condition is no longer applicable.
 - b. Any sewer lift station upgrades needed to serve the project shall be completed at the developer's expense, as determined necessary by the Public Works Director.
Per Randy Hines, this condition is no longer applicable.
 - c. Any additional water main segments needed to meet looping requirements shall be installed at the developer's expense, as determined necessary by the Public Works Director.
Per Randy Hines, this condition is no longer applicable.
- 11) Final maps shall be submitted and implemented in compliance with Churchill County Code, including but not limited to, water dedication timing, impact fee timing, and infrastructure construction timing.
The final map application for Sand Creek Subdivision #2, Phase 1 has been submitted in compliance with Churchill County Code with respect to timing, water dedication, impact fees, and infrastructure.
- 12) All Final Subdivision Maps shall be in substantial conformance with the approved Tentative Subdivision Map, and subject to the following:
- a. A submittal not in substantial conformance must first be approved as a modified Tentative Map by recommendation of the Planning Commission and approval by the BOCC.
Noted.
 - b. Final maps shall be submitted in numerical order, but consecutive phases may be grouped together.

Noted. The current final map application is the first final map application and is defined as Phase 1.

- c. Final maps for subsequent phases shall not be submitted until infrastructure for the previous phase is constructed.

Noted.

If you have any questions, please do not hesitate to contact me at 775.827.6111.

Sincerely,



Edward C. Thomas, P.E.
Senior Engineer

EXHIBIT 9 - FINAL AUDITED REVISION

COUNTY REZONE INSTRUCTIONS, I-3 DISTRICT PURPOSE, DEVELOPMENT STANDARDS, AND LAND USE TABLE

Evidence Supporting Ground VI's Zoning-Compatibility Analysis - ZC26-2

Why this exhibit matters. Ground VI addresses whether sufficient evidence supported the appropriate-use and compatibility determinations for the requested I-3 zoning. The County's own Code and rezone materials make the zoning classification broader than one presently stated project: §16.08.214 defines I-3 and expressly cross-references additional development regulations; §16.08.250 governs uses and permit levels; and the County's rezone instructions direct applicants to consider possible future uses allowed in the requested district.

Audit of §16.08.214 cross-references. Section 16.08.214 expressly directs the reader to CCC §14.04.030 and §16.16.020 for additional regulations that may affect I-3 uses. Section 16.16.020 is materially relevant to this appeal and is therefore added here. In particular, §16.16.020.2 applies friction-zone standards to newly constructed or changed industrial uses and contains separation/buffering provisions, including a specific one-half-mile highway setback for "Explosion and combustion testing." This exhibit does **not** assert that Rivian's described destructive battery testing has already been legally classified as that listed use; the provision is included because the governing I-3 section expressly incorporates these development standards and they illustrate why the actual use classification and characteristics can matter.

CCC §14.04.030. The cross-reference was also audited. It is located in Title 14, Buildings and Construction / Building Permits. We do not use it as a substantive Ground VI compatibility criterion here. Because the appeal's Ground VI turns on zoning compatibility and the Title 16 development/use standards, this exhibit preserves §16.08.214's express reference to §14.04.030 without implying that a building-permit provision independently proves or defeats compatibility.

Important limitation. Nothing in this exhibit predicts which future I-3 uses will occur, treats all I-3 uses as incompatible, or assumes that "destructive battery testing" equals "Explosion and combustion testing." Permit symbols, use classification, later permits, and other applicable Code requirements remain controlling. The exhibit supports the narrower point that the permanent zoning classification and the regulations the County itself makes applicable to it are relevant to the required compatibility analysis.

EXHIBIT 9 - PART A

CCC §16.08.214 - I-3 HEAVY INDUSTRIAL DISTRICT

The purpose of this district is to provide for heavy industrial activities and land uses that have the great potential for impacting adjacent land uses and infrastructure. This type of zoning should be located away from people and other non-industrial uses, and uses within it may have to develop their own access to roadway and/or railway transportation systems. Refer to section 14.04.030 of this Code and section 16.16.020 of this title for additional regulations that might affect uses in this district. Specific land uses are listed in the land use table under section 16.08.250 of this Title. HISTORY Adopted by Ord. Bill 2025-A, Ordinance 32 on 9/17/2025

Existing zoning context - CCC §16.08.220 RR-20

The purpose of this district is to protect and enhance all natural resources including historical and archaeological sites by limiting, controlling and prohibiting certain use of lands. Refer to section 14.04.030 of this Code and section 16.16.020 of this title for additional regulations that might affect uses in this district. Specific land uses are listed in the land use table under section 16.08.250 of this article. (Bill No. 2018-E, 2019)

EXHIBIT 9 - PART B

CCC §16.16.020 - SITE DEVELOPMENT STANDARDS

Source note. Section 16.08.214 expressly cross-references §16.16.020. The excerpts below reproduce the portions most directly relevant to I-3 intensity/separation and Ground VI. Other §16.16.020 subjects (outside storage, landscaping, parking, signs, lighting, and specific-use standards) remain part of the Code but are not necessary to this limited compatibility exhibit.

§16.16.020.1 - I-3 intensity and dimension standards

I-3 row appears in the official Site Development Standards table.

§16.16.020.2 - Friction Zone Typical Development Standards

The provisions of this section shall apply to any planned unit development, subdivision or parcel map and any newly constructed or change of commercial or industrial use in commercial or industrial zoning.

Commercial adjacent to industrial shall include a 75-foot-wide setback that extends from the rear of the industrial building to the front of the commercial building. An eight-foot landscape strip shall be dedicated for landscaping along the commercial side of the property line. The industrial building should be located 50 feet from the property line and the commercial buildings should be located 25 feet from the property line. Within the 50 feet between the industrial building and the property line, an eight-foot strip should be dedicated for landscaping. Additionally, buffers along all common property lines to minimize visual and noise pollution may be required up to and including an eight-foot-high sound wall at the discretion of the planning department.

Single-family adjacent to industrial shall include a 200-foot-wide setback that extends from the rear of the dwelling unit to the industrial building. Within the area between the building and the property line, an eight-foot-wide landscape strip with buffers along all common property lines to minimize visual and noise pollution that may be required up to and including an eight-foot-high sound wall at the discretion of the Planning Department shall be constructed. There will be a 100-foot minimum distance from the building to the property line.

The following land uses shall include no less than a one-half mile setback from the edge of right-of-way of U.S. 95 north, U.S. 95 south, U.S. 50 east (Austin Highway), U.S. 50 west (Carson Highway), U.S. 50 alternate (Reno Highway) and U.S. Interstate 80: Brothel, house of prostitution. Explosion and combustion testing. Junkyards, salvage yards, wrecking yards. Solid waste landfill.

EXHIBIT 9 - PART C

CCC §16.08.250 - RR-20 / I-3 USE TABLE COMPARISON

Operative provisions and legend: All proposed uses and developments must be categorized according to the use listings in the land use table of this section. Where a proposed use or development does not clearly match a listing in the table, the planning director shall perform a similar use determination to classify the proposed use or development as the closest applicable use listing in the table. A similar use determination may be appealed to the planning commission, or the planning commission may modify the determination during a normal permit hearing for the project. All proposed uses and developments must be consistent with the use limits and permitting requirements provided in the land use table of this section for the zoning district in which they are located. Variances may not be requested or approved to allow prohibited uses, nor to change the required permit or review for allowed uses. Refer to section 14.04.030 of this Code and section 16.16.020 of this title for additional regulations that might affect uses in these districts. All uses that include handling of materials designated as explosives or highly hazardous substances as defined under NRS 278.147 shall require a conditional use permit as set forth in 16.08.085 regardless of the zoning established in the Use Table. Certain uses, as defined in section 16.08.080, are required to obtain a special use permit regardless of the zoning established in the Use Table. Uses in the land use table of this section are identified with use limits, permit process requirements, and establish use limits and permit processes for specific instances, as provided below: (Blank) or x = Use is prohibited S = Use is allowed through a special use permit as defined in 16.08.080 C = Use is allowed through a conditional zoning permit as defined in 16.08.075 R = Use is allowed through a zoning review T = Use is allowed through a temporary use permit HB = Use is allowed through a home business permit - = Use is allowed without a zoning review or other permit * /+ = Either or both notations are used to identify and reference modifications to use limits or permit processes that apply in specific situations for the land use in the same row, and described under the land use name. † = Notation to identify modifications to use limits or permit processes within the NAS overlay. These apply only when a use is allowed, not prohibited. This notation increases the level of review normally required in a situation and is accompanied by one of the above symbols to indicate the minimum level of review. It may also indicate that a use that might be allowed is prohibited in the NAS overlay due to operational concerns. *Uses in NAS Fallon overlay may be †X - Prohibited, or †S - must have at least a SUP review, or †C - must have at least a Conditional Zoning Permit."

Use / category	RR-20	I-3	NAS
Agriculture and Resource Production and Support : NOTE : Transportation of resource products to and from an operation is allowed under the definition for the specific resource			
Agricultural Production - not included in specific listings Rangeland Agriculture (Dispersed grazing, nut harvesting, etc.) Timber Growing and Harvesting (fence poles, pulp trees, Christmas tree, etc.) Farming/Cropland Pasture Grazing (incl. small scale livestock feeding and hobby farms) * with an Agricultural Support Building	-/R*	-/R*	n/a
Aquaculture * If hydrologically connected to fish habitat areas	R/S*		n/a
Animal Feeding Operation - Small (feeding 100 to 1,000 animal units) * If with buildings	-/R*	-/R*	†S
Cannabis Establishment			n/a
Dairy/Feed Lot, minor alterations of existing buildings NOTE: new or major expansion treated as Animal Feeding Operation	R	R	†S
Animal Feeding Operation - Large (feeding more than 1,000 animal units)	R		†S
Land Application of Domestic Septage	S		n/a
Exotic Animal Farm (fur farm etc.) Excludes zoos and similar uses - see recreation uses	S		†S
Game Hunting Ranch Also see Recreation Resort in lodging uses	S		†S
NOTE : Review dog/cat/pet breeding facility as kennel in commercial uses			
Agriculture and Resource Related Retail :			
Farm Stand/Direct Resource Product Sales Site Review sales not associated with the growing farm, and sales not on the farm site as commercial use. Also see retail sales for other zones.	R		n/a
Nursery Sales (retail and wholesale)			†S
Agro-Tourism Treat processing as resource related industrial or industrial uses Also see retail sales and commercial uses for other zones.	S		†S
Farm Animal Auction Also see animal feeding operations	S		†S
Agriculture and Resource Related Industrial :			
Light Wood Processing and Storage (mills, paper, plywood, etc.)	S	C	†S
Light Milk/Cheese Processing and Storage * limited in scale to animals produced on the farm	S	C	†S
Light Meat Processing and Storage (slaughtering and butchering) * limited in scale to animals produced on the farm Review Office of Mobile Slaughtering Operation as commercial uses	S	C	†S
Light Crop Processing and Storage (mills, cereal processing, cold warehouses, canning, bottling, extracts, etc.)	S	R	†S
Geologic Drilling Activities (general drilling for mineral, geothermal, etc.)	R	R	†A
Oil and Gas Extraction Excludes processing see Chemical Manufacturing	S	C	†S
Mineral Extraction and Processing (including batch plants) * limited in scale to materials extracted on the same property NOTE : See temporary mining for other zones.	S	C	†S
Temporary Mineral Extraction and Processing for habitat restoration purposes			†S
NOTE: For natural resource energy projects - see Energy Production uses			
Industrial Uses :			
Warehouse Storage and Distribution * Prohibited if over 50 employees For multi-tenant space for businesses locations see commercial uses		C	†S*
Off-Premises Outdoor Storage (for business/personal use - not renting spaces)		C	n/a
Hazardous Materials Storage - Indoors or Outdoors Also see NRS 278.147 * - Prohibited if over 50 employees		S	†S*
Data Storage and Data Processing Facilities * - Prohibited if over 50 employees		C	†S*
Light Manufacturing (indoors & benign) Also see Laboratory in commercial uses		C	†X
Heavy Manufacturing		C	†X
Basic Chemical Manufacturing or Storage (excluding fuels)		C	†X
*Hazardous Chemical Manufacturing or Storage Also see NRS 278.147"		S	

Use / category	RR-20	I-3	NAS
Bitumen Emulsion Plant		C	
Bulk Fuel Storage and Distribution - small (<100,000 gal.) Includes incidental retail sales. Excludes vehicle fuel sales and storage incidental to other use.		C	†S
Explosive or Combustible Materials Testing See CCC 16.16.020.2 for 1/2 mi. setback from highways		S	†X
Tire Retreading/Rebuilding Excludes tire distilling - see Chemical Manufacturing		C	†X
Junkyard, Salvage Yard, Wrecking Yard See CCC 16.16.020.2 for 1/2 mi. setback from highways		C	†X
Asphalt and Concrete Batch Plants - also see mining * Prohibited unless temporary and for specific project		C	†S*
Outdoor Recreation Uses : (Note: For indoor recreation see commercial listings)			
Wildland and Unimproved Outdoor Recreation (hiking, riding, hunting, etc.)	-	-	n/a
Improved Passive Outdoor Recreation (park, trailhead parking, fishing facility)	R	R	n/a
Improved Active Outdoor Recreation Facility (sport complex w/multiple ball fields/courts, golf course, boat launch, zoo) - also see Game Hunting Ranch in agricultural uses * If approved in a PUD	S		†S
Equestrian Boarding and Training Facility May also need event venue permit, below	S		†S
Outdoor Recreation and Entertainment Facility (See definition CCC 16.24 under Recreation)	S		†X
Rodeo and Farm Animal Event Venue (racing, showing, equestrian events) NOTE : Also see Outdoor Recreation and Entertainment Facility for other zones.			†X
Outdoor Shooting Range	S	S	†X
Motorized Racetrack - with events or gatherings [[DEF- Established tracks with events for large and small vehicles]]	S		†X
Motorized riding track - personal use	-	-	n/a
Residential Uses :			
Single-Family Dwelling (the following are also SFDs - see definition) + Prohibited except for certain on-site businesses in CCC 16.16.020.8 * Prohibited unless residential lot was approved in a PUD or tentative map NOTE : Also see Community Residential Facilities and definition. Home for Individual Residential Care (1—2 + caretaker) Home for Groups with Disabilities (3—10 + caretaker) Halfway House for Substance Abuse Recovery (<11 resid.) Domestic Violence Shelter (<11 residents) Foster Home (1—6)	R		n/a
Accessory Dwelling Unit * Prohibited unless with existing legal permanent Single-Family Dwelling	C		n/a
Second Permanent Dwelling	C		n/a
2—4 Multi-Family Dwellings on a parcel * Only if approved in a PUD			†X
5+ Multi-Family Dwellings on a parcel * Only if approved in a PUD			†X
Boarding House			†X
Permanent Housing for Farm Labor (single and multi-family) * Multi-family prohibited - single-family only	S		n/a
Cluster Development (Requires a special land division permit process) * Prohibited under the NAS Fallon Accident Potential Zones			†S *
Planned Unit Development (Requires a special PUD permit process)		R	†X
Recreational Vehicle used as permanent dwelling (> 90 days/yr.) Such use prohibited except within authorized RV park (see Lodging section) or as approved Temporary Living Quarters.			†X
Temporary Living Quarters			
For hardship (elderly/disabled), or commercial/industrial watchmen	T	T	n/a
For farm labor, or while building a Single-Family Dwelling	T		n/a
Manufactured/Mobile Home Park			†X
Community Services			
Care of 1—4 children (treat as baby sitting)	-	-	n/a
Daycare Facility (5+ children or 1+ adults) * Prohibited unless under 13 persons	S		†S
Child Care Institution/Boarding School (16+ children; live-in facility)	S		†X
Educational Facility (public and private) Excludes informal classes - see Personal Training Svc. in commercial uses	S		†X
Public Auditoriums and Gathering Facilities (Religious assembly, Public Community Ctr. or Convention Ctr.) Excludes Private Gathering/Reception Facility - see commercial uses	S		†X
Government Services and Offices (museum, library, senior ctr., post office) Review Fleet Parking and Maintenance as separate listing in Vehicle uses	S		†X
Emergency and Law Services (police, jail, court, fire, ambulance, etc.)	S		†S
Emergency and Surgical Medical Facility (Hospitals, etc.) Review stand-alone day-surgery center as Medical Services in commercial Medical Offices and Helipads may be approved as accessory uses			†X
Extended Care Medical Facility (convalescent services, nursing home, mental health facility, hospice, etc.)			†X
Elder Care Facility (see definition)			†X
Community Residential Facility (also see Single Family Dwelling):			
Group Foster Home (7—15 children - see definition)	S		
Home for Groups with Disabilities (11—20; see definition)	S		†S

Use / category	RR-20	I-3	NAS
Domestic Violence Shelter (11+)	S		†S
Treatment Center or Halfway House for Substance Abuse Recovery (11+)	S		†S
Halfway House for Incarceration Transition (any number)	S		†S
Cemetery	S		n/a
Funeral and Interment Services (including crematory)			†S
Lodging Uses : NOTE : Review Vacation Home Rental as a Single-Family Dwelling Rental of whole home only, otherwise see Vacation Room Rentals			
Bed and Breakfast Inn and Vacation Room Rental (see definitions) * Prohibited unless with existing legal permanent Single-Family Dwelling	S		†S
Motel (does not include accessory uses)			†X
Hotel (includes accessory uses)			†X
Lodging approved in a PUD			†X
Recreation Resort (see definition) Also see Game Hunting Ranch	S		†S
Campground and Recreational Vehicle Facility (public and private)	S		†X
Commercial Uses : NOTE : Some businesses may qualify as a small-scale Home-Based Business			
Retail and Wholesale Sales Rentals and Repair - not included in specific listing (food, merchandise, hardware, etc.; new/used) For vehicle sales/rentals see Vehicle and Equipment category * If over 50,000 sf building; or if outdoor sales or storage area included; or if drive through services included; or if paint or chemical sales included + Prohibited if over 10,000 sf building, or if over 50 employees			†S
Multi-Tenant Business Complex (incl. shopping centers) * If over 10,000 sf. Each use in complex must be reviewed individually			†X
Beverage Distributor + Prohibited if over 50 employees		R	†S
Auction House * With outside sales area or outside speakers		C	†S
Cannabis Establishment			
Flea markets, swap meets, and special events			†S
Manufactured/Modular/Mobile Home Sales For construction of homes - see Industrial/Fabrication			†S
Firearm, Explosive, or Weapon Sales/Service/Rental - requiring an FFL			†S
Personal Storage (ministorage, RV, boat, etc.)	S		n/a
Off-Premises Storage Inside a building	R	R	
Home Based Businesses * If not meeting basic HB criteria + Prohibited unless associated with existing legal residence	HB/S*		n/a
General Offices and Services - not included in a specific listing + Prohibited if over 50 employees			†S
Office for Mobile Animal Slaughtering Business	S		n/a
Temporary Real Estate Office within a subdivision	R	R	n/a
Temporary Office (using a commercial coach)	T	T	n/a
Eating and Drinking Establishment * Prohibited unless fronting the I-80, US 50, US 50A and US 95 corridors + Prohibited unless approved in a PUD	S*	C	†S
Eating and Drinking Establishments - Farm Specialty (serving food from own farm - for other zones see regular uses above)			†S
NOTE : An Eating and Drinking Establishment serving alcohol requires a SUP			
Financial Service (banking, stocks, commodities, etc.) * If drive up services are included			n/a
Medical and Counseling Services (doctor offices, clinics, physical therapy, etc.)			†S
Personal Health and Beauty Service (hair, nails, spa, massage, etc.)			n/a
Body Marking Service (tattoo, piercing (excl. earrings), etc. - see definition)			n/a
Personal Training Service and Classes (professional, health, fitness, arts, etc.)			†S
Laundromat			n/a
Dry Cleaner			n/a
Baking Facility			†S
Craft/Art Studio (welding/pottery/painters/etc.; includes sales)	S		†A
Testing Service (office and sample collection; processing 1-use and field kits)			†A
Laboratory (chemical testing)		C	†X
Materials Testing Excludes Explosive and Combustion Testing - see industrial uses		C	†S
Veterinary Clinic	S		†S
Pet Grooming (for sales see retail)	S		†A
Mobile Animal Care Service Office (Grooming, Farrier, etc.)			n/a

Use / category	RR-20	I-3	NAS
Animal Boarding or Kennel	S		†S
Taxidermy	S		n/a
Construction Contractors and Property Services (incl. repair, plumbers, electricians, sign co., well drilling, etc.) * For painting contractors, or outdoor material/heavy equipment storage			†S
Utility and Telecom Offices/Shop * If fleet vehicle storage and maintenance is included	S		†S
Waste Collection Service (solid/garbage and liquid/septage) Also see Industrial category and septage application in natural resources	S	C	n/a
Pest Control Service			n/a
Janitorial/Cleaning Service			n/a
Private Gathering/Reception Facility (including clubs and fraternal orgs.) * Prohibited unless designed and approved for 100 people or less + Prohibited unless approved in a PUD	S*		†S
Indoor Entertainment Use - not in a separate listing (billiards, game parlor)			†S
Indoor Recreation and Entertainment Facility (see definition CCC 16.24 under Recreation) (auditorium, theater, playhouse, equestrian, bowling, ice/roller rink, soccer)			†X
Indoor Shooting Range	S		n/a
Casino/Gaming Establishment Additional uses are reviewed individually (food, hotel, theater, spa, etc.)			†X
Adult Entertainment (See Title 9)		S	n/a
Brothel, House of Prostitution (See Title 5) See CCC 16.16.020.2 for 1/2 mi. setback from highways	S		n/a
On-Site Advertising	S	R	n/a
Off-Site Advertising - billboards, highway signs, etc. * Prohibited unless meeting exceptions in 16.16.020.6.B.2.f	S/R*	R	n/a
Vehicle and Equipment Uses : (Also see Transportation Section)			
Standard Vehicle or Trailer Sales or Rental (see definition) (standard personal vehicle, ATV, motorcycle, assoc. trailer, and similar size vehicles)			†A
Specialized Vehicle or Trailer Sales or Rental (see definition) (RVs, motorhome, campers, moving trucks, dump trailers, horse trailers, etc.)			A
Commercial or Construction Trailer/Equipment Sales or Rental (see definition) (Commercial vehicles, cargo containers, construction equip., assoc. trailers)			†S
Vehicle/Equipment Service and Repair (including temporary storage of associated vehicles)	S		†S
Vehicle Fuel Sales and Travel Services (including Truck Stops) * Prohibited if a truck stop or travel center + If approved to be within a Planned Unit Development Additional uses are reviewed individually (food, hotel, vehicle service and repair, casino, laundromat, etc.)			†S*
Vehicle Washing Facility			n/a
Parking Lot for Operable Vehicles - Stand Alone			
Short Term	R	R	n/a
Long Term - more than one week Not for other on-site use; vehicles must come and go		C	n/a
NOTE : Also see storage uses in Commercial section for uses that may include vehicle storage			
Towing Business (including fleet parking and vehicle storage) Excluding Wrecking Yard/Junkyard - see Industrial category		C	n/a
Trucking Business/Package Delivery (including fleet parking) NOTE: Transport of on-site resource products is included with main use	S	C	†S
Fleet Vehicle Parking and Maintenance Facility (10+; bus barn, utility, etc.) Excluding uses with inherent parking (fire, police, trucking, etc.)	S	C	n/a
NOTE : For vehicle racing etc. see Indoor Recreation and Entertainment Facility in Commercial, or Outdoor Recreation Uses			
Transportation Facilities :			
Streets, roads, highways, and rail lines	-		n/a
Highway/Road Maintenance Facility	R		n/a
Ground Transportation Terminal and Park and Ride Lot (bus, rail, etc.) * Prohibited unless fronting I-80, US 50, US 50A and US 95, or a rail corridor	S*	C	†S
Airport	S	S	†X
Airstrip/landing strip/helicopter pad	S	S	†X
Railroad Company Operations Yard (sidings, car storage, switching)	-	-	n/a
Rail-Based Services and Industrial Parks (transloading, rental space, rail services, etc.) Each use must be reviewed individually.		C	†S
Utilities Facilities, Transmission, and Waste Handling :			
Local Utility Distribution Lines and Mains	-	-	n/a
Utility Transmission Line - Level 1 (within approved corridors)	-	-	n/a
Utility Transmission Line - Level 2 (not within approved corridors)	S	S	†S
Utility Handling Facility - Level 1 (small scale in-line)	R	R	n/a
Utility Handling Facility - Level 2 (treatment of less hazardous substances)	S	C	†S
Utility Handling Facility - Level 3 (treatment of more hazardous substances) * If previously approved in a PUD	S	C	†S

Use / category	RR-20	I-3	NAS
NOTE: Review utility company offices/maintenance facility as other uses.			
Communication tower and antennas (and accompanying facilities) * When co-locating the transmitter/receiver on existing towers, structures, or buildings.	S/R*	C/R*	n/a
Recycling Drop Box/Station	R	R	n/a
Recycling Facility * If all operations inside of a building	S/ R*	C/R*	n/a
Solid Waste Transfer Station	S	C	†X
Solid Waste Landfill (sanitary, construction waste, petroleum contaminated soil, hazardous waste, etc.) See CCC 16.16.020.2 for 1/2 mil. setback from highways		S	†X
Hazardous, Infectious, or Explosive Materials Disposal/Landfill See CCC 16.16.020.2 for 1/2 mil. setback from highways		S	†X
Energy Production : NOTE : See definition for Power Generation			
Private Power Generation and Alternatives (renewable or fuel-based) Not for electricity generation (windmill water pumps, solar hot water, geothermal heating, etc.) OR Power generation (including generators) for personal/on-site power needs only and less than 20 kw and 40 feet or less high	-	-	n/a
Minor Power Generation (renewable energy or fuel-based) Same as Private Power Generation and Alternatives, plus producing up to 500 Kw, and may be over 40' high * If over 40 in height	R/S*	R	†S
Major Power Generation (renewable energy or fuel-based) facilities not qualifying for Private or Minor Power Generation Prohibited if fuel based, or wind powered, or concentrated solar *For solar only, excluding concentrated solar	S	S/C*	†S/X+

Will your request result in the conversion of farmland to other uses? If so, what will happen to the farming operation?

- e. **The proposed zoning and project is sensitive to and compatible with the use and development of the adjacent properties.**

You must examine the Code's Use Table to view the possible uses allowed in the requested zoning district in the future. Why do you think those uses will be sensitive to and compatible with the neighborhood?

Application Signatures

APPLICANT AFFIDAVIT

_____, (PRINT NAME), being duly sworn, deposes and states that:

- 1) I/we either own the property described in the foregoing application, or have permission of the property owner which has been provided with the application;
- 2) The statements and answers herein contained, and the information herewith submitted are in all respects complete, true and correct to the best of my/our knowledge and belief;
- 3) That the zoning ordinances for a permit have been read, understood and complied with.
- 4) That no assurance or guarantee can be given by members of Planning Commission or Planning Department.
- 5) That any material misrepresentation or omission made in the application or at a public hearing by the applicant or an agent of the applicant may constitute grounds for reexamination of the permit, if granted.

State of _____)
County of _____)

Applicant's Signature

Signed and sworn to (or affirmed) before me on _____ (date) by

(name(s) of person(s) making statement).

Signature of notarial officer

Churchill County Public Works & Planning

Zoning District Change Instructions

INTRODUCTION

This application package is for projects requesting a **Zoning District Amendment** - also called a Rezone or Zone Change. It is authorized under CCC 16.08.060 to make a change to the County Code – specifically the Zoning Map. It is a request to change the land use designation of a parcel of land to a different designation. **Once implemented, any development allowed in the new zone can be proposed as listed in the Land Use Table found in CCC 16.08.250).**

APPLICANT NAME

The NAME entry is for the Applicant. This is the party proposing the change. It is NOT the representative or consultant. It MIGHT BE the landowner, but can be someone else such as a prospective purchaser.

ZONING DISTRICT AND PROPERTY INFORMATION

Enter the existing and proposed Zoning District(s) on the form. For requests with many addresses and parcel numbers, refer to an attachment or other location for the information.

SUBMITTAL PACKAGE AND REVIEW PROCEDURE

The application process starts with **2 pre-application meetings**: One to go over the basics of the form and the process, the other to go over the application materials for accuracy to identify any final changes before submittal. You may want to include pictures, plans, drawings, etc. to make your case.

A required item is an air photo picture showing the neighborhood and land uses of surrounding properties. You can get this from the County website showing the neighborhood of the site. Staff can assist if needed.

Also required is a picture showing the requested change in zoning. Use the zoning map obtained from the County website for the surrounding area, showing the colored zoning districts. It must be marked and labeled to show the proposed zoning change.

>> You can be view both maps on the County website (<https://nv-churchillcounty.civicplus.com/719/Web-Maps>). Copy and print a screen shot. On each map, note the applicant and address, as well as roads and other prominent features.

Staff review and notification procedures:

1. Within 7 days of the filing of the application the Department will provide written notification of application completeness and the date of the public hearings for both the Planning Commission and the Board of County Commissioners.
2. County staff will review the application and prepare a staff report for the Planning Commission.
3. At least 10 days prior to the public hearing, staff will notify all property owners within 300 feet of the subject property (at least 30 unique property owners will be notified) of the proposed application.
4. At least (3) working days before the public hearing, the agenda is posted and reminder notices are sent to the applicant. **The applicant or a representative must appear before the Planning Commission to present the application.**
5. After the Planning Commission public hearing, the application will be scheduled to go before the Board of County Commissioners with a recommendation from the Planning Commission.
6. **The Board of County Commissioners may approve or deny the application.** Approval might include requirements to complete before the zone change becomes effective.

QUESTIONS AND RELATED CRITERIA

To approve a zone change, there needs to be a good reason that meets the requirements in County Code. **There are "Findings" or approval criteria that must be met to approve a change.** The remainder of the form is composed of those criteria, and questions related to each of them. Instructions and explanation generally accompany the questions, so no additional instruction is provided here.

EXHIBIT 10 - CORRECTED FINAL

MOSS LANDING BATTERY INCIDENTS

OFFICIAL MONTEREY COUNTY AND U.S. EPA EVIDENCE

Supporting Evidence Relevant to Ground V, Sections H-K - ZC26-2

Purpose. Ground V cites the Moss Landing incidents for the limited proposition that battery incidents can, depending on their type and scale, require off-site protective actions, transportation restrictions, multi-agency response, environmental monitoring and sampling, and continuing post-fire response. The evidence is offered to show why sufficient project-specific information is material to identifying reasonably foreseeable public-service and emergency-response demands.

Critical distinction. Moss Landing was a utility-scale battery energy-storage complex and is materially different in purpose and scale from the battery-testing use presently described for ZC26-2. This exhibit does not predict that Rivian will experience a comparable incident, require evacuation or highway closure, or create off-site contamination.

Part A - County of Monterey. The County's 2025-26 Legislative Platform documents emergency response involving fire, HAZMAT, Environmental Health, law enforcement and EPA; a shelter-in-place incident; the January 2025 mandatory evacuation of 1,500 people; and State Route 1 closures.

Part B - U.S. EPA presentation. Selected official slides document the January response, EPA air monitoring, the February 18 flare-up, preparedness measures and multi-agency participation.

Part C - U.S. EPA Notice of Federal Response Action. The complete January 22, 2025 notice is retained. Highlighting is limited to EPA's response determination and the response measures most directly relevant to Ground V: fire watch/suppression readiness, perimeter/community monitoring, emergency-response planning, water containment/sampling, prevention of off-site migration, and debris/plume sampling.

Part D - Monterey County Environmental Health data review. The opening pages document the January fire, February flare-up, and sampling of air, soil, surface water and surface wipes.

Balanced record. The appeal also acknowledges EPA's favorable air-monitoring result. This evidence is not offered to presume danger; it demonstrates the role factual monitoring and project-specific information play in public-health and emergency-response decisions.

Lithium-Ion Battery Energy Storage System (BESS) Facilities

The Moss Landing Lithium-Ion Battery Energy Storage System (BESS), one of the world's largest BESS, is located in Monterey County at the retired Moss Landing oil and gas-fired power plant, which was built by PG&E. The facility began operating in December 2020 and houses large quantities of LG brand and Tesla brand lithium-ion battery packs managed by Vistra Energy and PG&E, respectively. There have been several incidents at the site resulting in emergency response from the local fire protection district, regional HAZMAT team, the Environmental Health Bureau, law enforcement, the U.S Environmental Protection Agency (EPA) and others. One of these incidents resulted a shelter-in-place order issued to the surrounding residential community due to potentially hazardous air quality. A second incident, in January 2025, resulted in the mandatory evacuation of 1,500 people. Both of these incidents resulted in the closure of State Route 1, which lasted several days for the second incident. Utility scale battery usage at the residential level, as well as commercial level, will continue to increase as the focus on renewable energy source demands intensifies.

Key Objectives:

Support local activities necessary to implement SB 38 (Laird, 2023). Support policies and funding for local emergency response resulting from BESS hazardous threats to the surrounding community and environment. Support stronger legislation that requires emergency action plans and the owner or operator of the facility to coordinate with local emergency management agencies, unified program agencies, and local first response agencies. Impose stronger restrictions and regulations on BESS facilities that help ensure local community safety and environmental protection is prioritized. Support new environmental health, public health, and safety regulations for BESS as they develop. Support additional accountability measures and additional opportunities for local governments to have a say in the operation and siting of BESS facilities.

San Lucas Clean Drinking Water

San Lucas is a small, disadvantaged farming community located in unincorporated Monterey County approximately eight miles from King City. The community water system (approximately 100 connections) is owned and operated by the San Lucas County Water District. The San Lucas Clean Drinking Water Project would address ongoing water quality problems at the existing District water source which have occurred since 2006. In 2011, a "do not drink" order was issued, and despite establishing an alternative well to serve the community, a second "do not drink" order was issued in 2016. The lack of safe, affordable drinking water for the community has also caused a nearly 20-year delay of a severely needed affordable housing project in San Lucas.

The County and the District are working with the State Water Resources Control Board to identify potential solutions to address the water quality issues. The State Board is providing the District with Technical Assistance to identify a project that will provide safe drinking water to the community. The County is supportive of the project that the State Board has identified as an alternative, that would construct a new pipeline to tie into the Cal Water system on the east side of King City and deliver water directly to the District water distribution tank. The pipeline project will have the lowest impact on the community's water rates long-term, compared to the other project alternatives identified.

While there has been a responsible party identified for the nitrate water quality issues, other water quality issues also need to be addressed. The responsible party will be partially financially liable for the treatment of nitrates, however, should the pipeline move forward. The County's Federal FY24 Community Project

Response Timeline

- On **January 16, 2025**, a battery module in the ML300 building ignited, resulting in a large fire.
 - Evacuation order was issued to area, approximately 1,200 people (lifted on **Friday, January 17th, at 6 p.m.**).
 - Monterey County Health and North County Fire requested assistance from EPA to provide air monitoring.
- **January 18, 2025**: Fire goes out. EPA consulted with county and transferred air monitoring to Vistra on **January 20**.
- **January 22, 2025**: EPA issues a Notice of Federal Response Action to Vistra.
- **February 18, 2025**: small flare-up burned for approximately 10 hours (to date, no additional incidents of smoke or fire).
 - California Environmental Protection Agency requested that EPA lead the oversight of Vistra's battery removal work.
- **From January to July 2025**, EPA focused on negotiation of battery removal agreement (ASAOC), technical review of detailed project plans, and preparation for battery removal.



Planning and Preparedness

Onsite fire & rescue

- North County Fire Dept. regularly visits site, involved in planning efforts
- Private firefighting/rescue on-site

Monitoring plans

- Private firefighting team performs building walkthroughs w/ temperature monitoring and visual checks to catch problems early
- Perimeter and community air **monitoring**
- Perimeter and community air **sampling**
- Thermal camera monitoring battery temperatures (during handling)
- Site specific emergency response plan developed



Agency Involvement

- United States Environmental Protection Agency
- Monterey County Health Department, Environmental Health Bureau
- State of California EPA
- State of California State Water Resources Control Board
- State of California Department of Toxic Substances and Control
- County of Monterey Department of Emergency Management
- North County Fire Protection District



CalEPA
California Environmental
Protection Agency



**COUNTY OF MONTEREY
HEALTH DEPARTMENT**



Emergency Response, Planning & Preparedness Branch

U.S. Environmental Protection Agency

17

Agency Roles



Incident Objective 1 – Emergency Response, Battery Removal

- **LEAD: EPA Emergency Response (Overseeing Vistra)**
- Inside fence line
- Incident management, battery handling, on-site treatment, recycling and disposal



Incident Objective 2 – Broader study on risk assessment from January fire

- **LEAD: Monterey County / CalEPA, DTSC**
- Outside fence line
- **Assessment of longer-term exposure and impacts**



Incident Objective 3 – Long-Term Cleanup as Necessary

- **LEAD: Monterey County / CalEPA (Water Board and DTSC)**
- Assess any long-term remediation needs– **surface water, groundwater, site characterization**



REGION 9

SAN FRANCISCO, CA 94105

January 22, 2025

Cynthia Vodopivec
SVP - Environmental, Health and Safety
6555 Sierra Drive
Irving, TX 75039

Re: Notice of Federal Response Action issued to Vistra Corp. (Vistra) regarding the site located at 7301 State Highway 1, Moss Landing, CA 95039

Dear Cynthia Vodopivec:

The U.S. Environmental Protection Agency (EPA) has been informed of a release or threatened release of hazardous substances, pollutants, or contaminants into the environment at the Moss Landing Power Plant site, located at 7301 State Highway 1, Moss Landing, CA 95039 (the site).

Under the authority of the National Contingency Plan (NCP), 40 CFR Part 300, and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, 42 U.S.C. Section 9601, et seq., EPA evaluates whether responsible parties or other agencies are properly responding to such releases.

This site is within the jurisdiction of EPA and the EPA On-Scene Coordinator (OSC) is charged with coordinating, directing, and reviewing the work of responders to ensure compliance with the NCP. The primary OSC for this site is Olivia Trombadore. Alternative OSCs for the site include Justin Marquez and Katherine Hull.

Responsible parties generally include the current or former operator and/or owner of the site and persons who generated or were involved in the transportation, management, or disposal of the materials at the site. Before EPA initiates a response, potentially responsible parties, where practicable, are offered the opportunity to conduct the response. If the responsible party decides to perform the work, EPA may enter into an administrative agreement with the party which memorializes that commitment. If the responsible party is unwilling to perform the response, EPA may issue an order which requires the party to perform the work or EPA may perform the work. If public funds are expended for a response action, responsible parties may be held liable for all government costs, including the cost of overseeing work performed by responsible parties.

This notice is to inform you that EPA has determined that a response action is necessary at the site and to give you the opportunity to conduct the response. Your intention to do so, or your unwillingness to

do so, should be immediately conveyed to the OSC. Correspondence should be directed to the OSC at the following address or at trombadore.olivia@epa.gov, with copies to marquez.justin@epa.gov and hull.katherine@epa.gov.

If the OSC determines that the response to the release or threatened release is not being properly conducted, EPA may initiate the required response action. The fire at the Moss Landing Power Plant facility has caused a release or threat of release of hazardous substances into the environment. The contaminants of concern are particulate matter, Asbestos, heavy metals, and toxic gases such as Hydrogen Fluoride. The following actions are considered necessary for a proper response, within the specified time frame:

Description
Immediate Response Actions. Immediately implement the following actions: - Conduct Ash/debris sampling in the community, as described under “Immediate Community Debris Sampling,” below. - Conduct 24-hour fire watch and be prepared to conduct fire suppression activities, if needed. - Conduct worker health and safety air monitoring for percent Oxygen, Lower Explosive Limit, total Volatile Organic Compounds (VOCs), Carbon Monoxide, Hydrogen Cyanide, Hydrogen Fluoride, and heavy metals (as particulates). - Conduct worker health and safety asbestos sampling. - Implement perimeter air monitoring of the facility for particulate matter and Hydrogen Fluoride, per EPA’s direction. - Maintain site security and restrict access to the site. Please replace any government personnel at the check point with either Vistra personnel or private security.
Emergency Response Plan. By 8:00 am Pacific Standard Time (PST) on January 27, 2025, submit to EPA an emergency response plan (“Emergency Response Plan”) to prepare for a secondary fire/emergency, which includes plans to: - Conduct ash/debris sampling in the community described under “Immediate Community Debris Sampling” below. - Conduct 24-hour fire watch and be prepared to conduct fire suppression activities, if needed. - Conduct worker health and safety air monitoring for percent Oxygen, Lower Explosive Limit, total Volatile Organic Compounds (VOCs), Carbon Monoxide, Hydrogen Cyanide, Hydrogen Fluoride, and heavy metals (as particulates). - Conduct community air monitoring for particulate matter and toxic gases including Hydrogen Fluoride. Conduct co-located air sampling for Asbestos, heavy metals, and Hydrogen Fluoride. Air sampling should be consistent with NIOSH Method 7300 for metals, NIOSH Method 7902 for Hydrogen Fluoride, and NIOSH Method 7400 for asbestos. - Manage water collection, containment, and sampling of water on site. - Prevent the off-site migration of fire suppressants or water potentially affected by contaminants. To include implementing a water sampling program for fire suppression runoff if firefighting suppression water is migrating off-site. Analytes should be outlined in plan and samples should be run on a 24-hour turn around time during an emergency.

The Emergency Response Plan must be approved by EPA. Upon approval of the Emergency Response Plan by EPA, Vistra shall promptly implement the work required under the plan.

Health and Safety Plans. Submit to EPA a Health and Safety Plan (HASP) that meets the requirements pursuant 29 CFR 1910.120(b)(4). Submit the HASP EPA by 8:00 am PST on January 27, 2025. Any contractors hired to implement air surveillance or water sampling must have an approved HASP prior to beginning work.

Immediate Community Debris Sampling. Promptly coordinate with the County of Monterey to respond to any requests for the collection and sampling of ash/debris for asbestos and heavy metals. Establish a mechanism for reporting the results of such sampling activity to the individual(s) who requested such sampling and to EPA. Implement a dust sampling plan which provides for sampling of, at a minimum, asbestos and metals, **within the footprint of the soot deposition plume** (as determined by EPA). Report the results of any such sampling to EPA.

On-Site Safety. Compliance with 29 CFR 1910.120: Hazardous Waste Operations and Emergency Response (HAZWOPER) for all personnel on-site. Proof of compliance must include: the written safety and health program plan and all ancillary plans required pursuant to 29 CFR 1910.120(b)(1); proof of a medical surveillance program (29 CFR 1910.120(f)); and proof of training (29 CFR 1910.120(e)). Contractors brought on-site to conduct work must follow HAZWOPER, no exceptions.

Permit requirements. No federal, state, or local permits are required for on-site response actions conducted pursuant to CERCLA sections 104, 106, 120, 121, or 122 and subject to EPA oversight.

If you have any questions regarding legal authorities, rights, or sanctions under the law, you may contact Laura Friedli in the Office of Regional Counsel, at 415-972-3325. If you have any technical or operational questions, contact the OSCs, at the telephone numbers listed below. During non-business hours, you may also contact the EPA Spillphone Duty Officer, at 415-300-2193.

On-Scene Coordinators: Name: Olivia Trombadore
Phone: 415-243-7750
Email: trombadore.olivia@epa.gov

Name: Justin Marquez
Phone: 562-733-0466
Email: marquez.justin@epa.gov

Name: Katherine Hull
Phone: 415-798-0369
Email: hull.katherine@epa.gov

Acknowledgment of Receipt

Received

by: _____

Date: _____

cc: File

Laura Friedli, EPA ORC

Randy McMurry, Monterey County Environmental Health

Maria Ferdin, Monterey County Environmental Health

Donn Poticar, Monterey County Environmental Health

Rick Encarnacion, Monterey County Environmental Health



Date: June 25, 2025
Revised: July 8, 2025
Project No.: 1593-1-1

Prepared For: Ms. Nicole Fowler
**COUNTY OF MONTEREY COUNTY ENVIRONMENTAL HEALTH
BUREAU**
1270 Natividad Road
Monterey, California 93906

Re: Moss Landing Vistra Battery Fire Data Review
7301 Highway 1
Moss Landing, CA 95039

Dear Ms. Fowler:

We are pleased to submit the results of the preliminary data review for the Moss Landing Vistra Battery Fire Emergency Response on behalf of the Monterey County Environmental Health Bureau (EHB).

Background

On January 16, 2025, a fire occurred at the Moss 300 battery energy storage facility operated by Vistra Corporation (Vistra) at the Moss Landings Power Plant located at 7301 Highway 1 (source property). The initial fire incident occurred for approximately five days, resulting in evacuation orders for local residents that were lifted on January 19, 2025. A subsequent flare-up fire occurred on the evening of February 18, but was contained by early in the morning of February 19, 2025. Vistra has been named as the responsible party. Due to the widespread nature of potential impacts, a coalition of regulators is overseeing the response, including local, state, and federal agencies.

Samples have been collected at the source property and in the surrounding areas. Samples were collected from the following media: air, soil, surface water, and surface wipes. The sampling was performed by a variety of regulatory agencies, community groups, and by Vistra's environmental consultant. Data has been used for emergency response and decision making purposes. The publicly available environmental data has been consolidated and posted to the County's Data Dashboard Viewer¹, and Testing and Monitoring Website².

We understand that the Monterey County Board of Supervisors desired a review of the available data and preliminary conclusions related to human health risk, if possible.

¹ [Moss Landing Vistra Battery Fire Data Dashboard Online Viewer](#)

² [Testing and Monitoring | County of Monterey, CA](#)

Conclusions and Recommendations

Cornerstone's data review and toxicological sub-consultant, Integral Consulting (Integral), reviewed the publicly available and limited amount of non-publicly available environmental data.

Based on their review, Integral noted several limitations of the dataset presented in the dashboard. At this time, the preparation of a robust and defensible HHRA would be challenging for these reasons. Additionally, preliminary evaluations of human health risk conducted using the data presented in the dashboard would be subject to a high level of uncertainty.

Prior to the preparation of an HHRA, the specific goals should be clearly defined, including identification of specific receptor groups or regions. Additionally, a sampling and analysis plan should be prepared outlining the supplemental samples to be collected. The additional data may be used to expand the existing dataset so that human health risk can be evaluated for the desired receptors. The plan should be reviewed by an experienced risk assessor to confirm it sufficiently addresses the data gaps identified by Integral. Please refer directly to Integral's memo for additional conclusions and recommendations, including those to improve the quality of the dashboard, are presented in the attached summary letter.

Limitations

Findings, opinions, conclusions, and recommendations presented in this report are based on readily available information. Monterey County EHB understands that Cornerstone reviewed and relied on the information presented in these reports and cannot be responsible for their accuracy.

This report, an instrument of professional service, was prepared for the sole use of Monterey County EHB and may not be reproduced or distributed without written authorization from Cornerstone. Cornerstone makes no warranty, expressed or implied, except that our services have been performed in accordance with the environmental principles generally accepted at this time and location.

EXHIBIT 11

CITY OF RENO v. CITIZENS FOR COLD SPRINGS 126 Nev. 263, 236 P.3d 10 (2010)

Nevada Supreme Court Authority Relevant to Grounds II and IV - ZC26-2

Purpose. The appeal cites *City of Reno v. Citizens for Cold Springs* for a narrow Nevada land-use principle: when the governing ordinance requires an infrastructure/services finding at the zoning stage, later development review does not necessarily substitute for an adequate factual basis supporting that present finding.

What the Court held. The Nevada Supreme Court concluded that Reno violated its then-applicable municipal code because the findings made before approval of the zoning ordinance concerning planned water services and infrastructure deferred the issue and were too general to satisfy the code. The Court rejected Reno's argument that it was enough to leave the details for later development proceedings where the ordinance itself required a finding concerning adequate services and infrastructure.

Important limitation. *Cold Springs* interpreted Reno's former municipal code, not Churchill County Code, and involved a much larger proposed development. This exhibit does not contend that Reno's ordinance controls ZC26-2 or that final engineering is required before rezoning. Churchill County independently establishes the findings applicable to ZC26-2 under CCC §16.08.060(E). The case is offered as persuasive Nevada authority concerning the distinction between later project details and evidence necessary to support a presently required zoning finding.

Why it supports this appeal. Grounds II and IV expressly acknowledge that permanent utilities and final engineering may be developed later. Their narrower challenge is whether the existing record contained enough planning-level information to support Churchill County's present finding concerning adequate services and infrastructure when permanent power, water and septic were described as matters that would "come later."

Source and highlighting. The complete Nevada Supreme Court opinion is included. Because the verified opinion PDF is image-based, yellow bands are used only as navigation aids on the pages containing the Court's key infrastructure discussion and conclusion; the original text remains fully visible and unaltered.

126 Nev., Advance Opinion 27

IN THE SUPREME COURT OF THE STATE OF NEVADA

CITY OF RENO,
Appellant,

vs.

CITIZENS FOR COLD SPRINGS;
ANTHONY MIDMORE; AND JOAN
LISCOM,
Respondents.

No. 50301

FILED

JUL 29 2010

TRACIE L. LINDEMAN
CLERK OF SUPREME COURT
BY *[Signature]*
CHIEF DEPUTY CLERK

Appeal from an amended district court order in a land use action. Second Judicial District Court, Washoe County; Robert H. Perry, Judge.

Affirmed in part and reversed in part.

John J. Kadlic, City Attorney, and Marilyn D. Craig, Deputy City Attorney, Reno,
for Appellant.

John L. Marshall, Reno,
for Respondents.

McDonald Carano Wilson LLP and Michael A.T. Pagni and Mark W. Dunagan, Reno,
for Amici Curiae.

BEFORE THE COURT EN BANC.

OPINION

By the Court, GIBBONS, J.:

In this appeal, we consider whether the City of Reno violated Nevada law by conditionally approving amendments to the Reno Master Plan prior to the Truckee Meadows Regional Planning Commission's

decision that the proposed amendments conformed to the Truckee Meadows Regional Plan. We also consider whether the City violated a former provision in the Reno Municipal Code (RMC) by failing to make a sufficient finding about plans for water services and infrastructure before passing a zoning ordinance that corresponded with the proposed master-plan amendments. We conclude that the City complied with Nevada law because the master-plan amendments only became effective after the Regional Planning Commission determined that the proposed amendments conformed to the regional plan. We further conclude that the City violated the RMC because the findings it made prior to approval of the zoning ordinance about planned water services and infrastructure deferred the subject to a later date and were too general in nature to satisfy the mandates of the code. Therefore, we affirm in part and reverse in part.

FACTS AND PROCEDURAL HISTORY

I. Passage of Resolution 6712 and Ordinance 5809

Cold Springs is a predominately rural area located north of Reno. It is a closed hydrographic basin that traps water and sewer outflow within its confines. Because of the closed nature of Cold Springs' water services and infrastructure, there are limited water supplies and sewage disposal available to its citizens. In 2005, the City passed a zoning ordinance that annexed approximately 6,800 acres of undeveloped land in Cold Springs.¹ The City annexed this land because developers proposed

¹This court considered issues surrounding the annexation of land in Cold Springs in the case of Citizens for Cold Springs v. City of Reno, 125 Nev. ___, 218 P.3d 847 (2009).

substantial urbanization in the area, including 13.5 million square feet of new commercial space and 6,860 new residential units. After the annexation, Nevada's statutory scheme required the Reno Planning Commission and City Council to modify the City's master plan and zoning provisions before development could begin.

Pursuant to NRS 278.030(1), the governing entity of each Nevada city with a population of 25,000 people or more must create a planning commission. City planning commissions are responsible for drafting and adopting master plans. Sustainable Growth v. Jumpers, LLC, 122 Nev. 53, 62, 128 P.3d 452, 459 (2006) (citing NRS 278.150(1)-(2)). Master plans contain long-term, comprehensive guides for the orderly development and growth of an area. Id. (citing NRS 278.150(1)-(2)). Before adopting a substantial amendment to a master plan, the city planning commission must hold at least one public hearing after providing notice by publication of the hearing's time and place. NRS 278.210(1). Once the city planning commission adopts the master-plan amendments, the local governing body may adopt such amendments if they can be practically applied for the area's development. NRS 278.220(1). Before adopting any amendment, however, the governing body must hold a public hearing after providing notice by publication of the hearing's time and place. NRS 278.220(3).

When a governing body adopts an amendment to a master plan, it must also abide by the procedures set forth in NRS 278.0282. Subsection 1 of NRS 278.0282 states that "[b]efore the adoption or amendment of any master plan, . . . each governing body and any other affected entity shall submit the proposed plan or amendment to the regional planning commission." Once the governing body submits the

proposed master-plan amendment, the regional planning commission shall "determine whether the proposed plan or amendment conforms with the comprehensive regional plan." NRS 278.0282(1). Regional plans set forth goals and policies for the physical development and orderly management of the regional area in question. NRS 278.0272(1)-(2).

Governing bodies may also enact zoning ordinances with a procedure similar to that used to adopt amendments to master plans. NRS 278.260(1) sets forth that local governing entities must provide for the manner in which zoning ordinances are amended. Under RMC section 2.100, a local committee must first consider a proposed ordinance and, after the city meets requirements for the notice and publication of the provision, the Reno City Council must either adopt or reject the proposed ordinance within 45 days after the publication. Any proposed zoning changes must also substantially conform to the applicable master plan. Nova Horizon v. City Council, Reno, 105 Nev. 92, 96, 769 P.2d 721, 723 (1989). Pursuant to NRS 278.0284, "[a]ny action of a local government relating to . . . zoning . . . must conform to the master plan of the local government. In adopting any ordinance or regulation relating to . . . zoning, . . . the local government shall make a specific finding that the ordinance conforms to the master plan." In addition, NRS 278.250(2) states that "zoning regulations must be adopted in accordance with the master plan for land use."

In this case, the Reno Planning Commission held a public hearing to discuss amendments to the Reno Master Plan and the passage of a corresponding zoning ordinance. The proposed zoning ordinance would rezone the subject property in Cold Springs from generally rural land-use designations to industrial, commercial, and urban residential

classifications. The proposed master-plan amendments would alter the Reno Master Plan so that it was in agreement with the proposed zoning ordinance. The Reno Planning Commission then approved the master-plan amendments and corresponding zoning ordinance. When considering these provisions, it deferred issues about supplying the prospective development with water services and infrastructure to a later date.

After the Reno Planning Commission approved the proposed amendments and ordinance, the Reno City Council considered them at a public hearing. The City Council then conditionally approved the master-plan amendments in Resolution 6712, which would change the Reno Master Plan by altering the land-use designations for the subject property. The resolution stated that it would "become effective upon a determination of conformance by the Regional Planning Commission." Next, the City Council changed Cold Springs' rural zoning designations to primarily urban designations in Ordinance 5809. Although Ordinance 5809 originally stated that it would become effective several days after its adoption, the City Council amended the ordinance so that it would become effective upon the Regional Planning Commission's determination that the master-plan amendments conformed to the regional plan. When passing Resolution 6712 and Ordinance 5809, the City Council did not find that Cold Springs' existing water services and infrastructure were adequate to serve the potential growth on the property. Nor did it make a finding specifying plans to supply additional water services and infrastructure to the subject property to meet the anticipated demand caused by development.

Following the passage of these provisions, the City Council submitted the proposed master-plan amendments to the Regional

Planning Commission at the Truckee Meadows Regional Planning Agency so that it could determine whether the amendments conformed to the Truckee Meadows Regional Plan. The Nevada Legislature created the Truckee Meadows Regional Planning Agency in 1989 to foster coordination between Reno, Sparks, and Washoe County. The agency is comprised of a director, staff, the Regional Planning Governing Board, and the Regional Planning Commission. The agency adopted the first Truckee Meadows Regional Plan in 1991. Then in 2002, it adopted a regional plan that created a streamlined, simplified process for coordinating land-use development in Reno, Sparks, and Washoe County. In this case, the Regional Planning Commission unanimously determined that the proposed amendments to the Reno Master Plan conformed to the Truckee Meadows Regional Plan. Upon the finding of conformance, both Resolution 6712 and Ordinance 5809 went into effect.

II. District court proceedings

Respondents filed suit against the City in 2006. Respondents consist of citizens, taxpayers, residents, and property owners of the subject land in Cold Springs. They are concerned about the proposed urbanization and development in Cold Springs because this area has limited water supplies and infrastructure. Their complaint requested declaratory and injunctive relief, and petitioned for a writ of mandamus. After the parties experienced confusion regarding the proper mechanism for respondents' challenge, respondents filed an amended complaint that petitioned for both a writ of mandamus and judicial review.

In the amended complaint, respondents alleged that the City erred by adopting Ordinance 5809 because this zoning ordinance did not conform to the existing master plan at the time of its passage and

adoption. According to respondents, the City attempted to amend the existing master plan by adopting Resolution 6712, but it failed to properly enact the resolution because it did not obtain a determination from the Regional Planning Commission stating that the master-plan amendments conformed to the regional plan prior to the resolution's passage. Respondents also alleged that the City erred by adopting Ordinance 5809 because the City did not make a finding about plans for water services and infrastructure prior to the ordinance's passage, nor did the ordinance promote orderly development.

The district court considered respondents' arguments during a hearing. After the hearing, the district court ordered the City to set aside Ordinance 5809. The parties then agreed to submit a proposed amended order to the district court to clarify its findings. In the amended order, the district court concluded that "the requirements of first obtaining an amendment to the Master Plan and having a plan to provide services are more than mere procedural guidelines." Although the district court did not order the City to set aside Resolution 6712, it partly based its decision to mandate that the City set aside Ordinance 5809 upon the premise that the City did not properly amend the Reno Master Plan before adopting Ordinance 5809. The district court also concluded that the City disregarded procedure in the RMC when adopting Ordinance 5809 because it did not make a finding regarding plans for the provision of services and infrastructure necessary due to the future development in Cold Springs. The City now appeals from the district court's amended order.

DISCUSSION

I. Standard of review

In this case, respondents filed a complaint in district court for declaratory and injunctive relief, and for a writ of mandamus. A writ of mandamus is a remedy that exists “to compel the performance of an act which the law especially enjoins as a duty resulting from office.” Board of Comm’rs v. Dayton Dev. Co., 91 Nev. 71, 75, 530 P.2d 1187, 1189 (1975). This extraordinary remedy can also correct a governing body’s manifest abuse of discretion in zoning cases. Id.

After respondents filed their complaint, this court issued its decision in Kay v. Nunez, 122 Nev. 1100, 146 P.3d 801 (2006). In Kay, the appellant filed petitions in district court for a writ of mandamus and judicial review to contest a local government’s zoning and land-use decision. Id. at 1103, 146 P.3d at 804. This court concluded in Kay that a petition for judicial review was the proper mechanism for seeking review of a local government’s zoning and planning decision in district court. Id. at 1104-06, 146 P.3d at 804-05. The court arrived at this conclusion based on the express language in NRS 278.3195(4), which sets forth that a person who administratively appeals a zoning decision under the applicable ordinance to the governing board and is aggrieved by the board’s decision may appeal by timely filing a petition for judicial review in district court. Id. at 1104-05, 146 P.3d at 804-05.

Given the ruling in Kay, respondents amended their complaint to petition for both a writ of mandamus and judicial review. After a hearing, the district court ordered the City to set aside Ordinance 5809. In its order, the district court noted that the parties initially disputed whether a petition for a writ of mandamus or for judicial review was the

appropriate vehicle for respondents' challenge. The district court also noted that later on during the proceedings, the parties appeared to agree that the proper vehicle was a writ of mandamus. The City continues to argue on appeal that the proper vehicle for respondents' challenge was a writ of mandamus. According to the City, a petition for judicial review is improper in this case because the City's enactment of Ordinance 5809 was a legislative act that is not subject to NRS 278.3195(4). However, we conclude that the petition for judicial review was the proper mechanism.

The enactment of zoning ordinances and amendments by local municipal entities constitutes sound legislative action. McKenzie v. Shelly, 77 Nev. 237, 242, 362 P.2d 268, 270 (1961). Some courts do not extend judicial review to the legislative process of enacting zoning amendments. 4 Patricia E. Salkin, American Law of Zoning § 42:5 (5th ed. 2010). However, the procedural actions of municipal legislative entities may still be subject to judicial review. Id. In City of Beechwood Village v. Council, Etc., 574 S.W.2d 322, 323 (Ky. Ct. App. 1978), the Court of Appeals of Kentucky reviewed an amendment to a zoning map adopted by a local legislative body. The court in Beechwood Village invalidated the zoning amendment because the local legislative body failed to make a sufficient finding explaining why the amendment conformed to the community's comprehensive plan. Id. at 323-25.

Similarly, the Court of Appeals of New York concluded in Voelckers v. Guelli, 446 N.E.2d 764, 767-68 (N.Y. 1983), that courts could judicially review the voting procedures used by local town boards to enact zoning amendments. In Voelckers, respondents argued on appeal that the lower courts had exceeded their authority by reviewing a legislative action, meaning the town board's action related to a proposed zoning code

amendment. Id. at 767. The court disagreed and concluded that “a determination of such a nature—addressing a question of procedure only, eschewing any intrusion into the substance of the matter being voted on—is within the scope of judicial authority.” Id. at 768.

In this case, we consider two procedural issues raised by the parties: (1) whether the City complied with NRS 278.0282 when passing the amendments to the Reno Master Plan in Resolution 6712, and (2) whether the City complied with former RMC section 18.06.404(d)(1)(b) when rezoning the subject property in Ordinance 5809. Because these issues are procedural and do not require this court to consider the substance or content of the enactments, we conclude that a petition for judicial review was the proper vehicle for respondents’ challenge. See Voelckers, 446 N.E.2d at 767-68.

When considering petitions for judicial review in zoning cases, both the district court and this court review the agency record to decide whether substantial evidence supports the governing body’s findings. Kay, 122 Nev. at 1105, 146 P.3d at 805. Substantial evidence is that which a reasonable mind could accept as sufficient to support a conclusion. State, Emp. Security v. Hilton Hotels, 102 Nev. 606, 608, 729 P.2d 497, 498 (1986). This court will not substitute its judgment for that of a municipal entity if substantial evidence supports the entity’s action. McKenzie, 77 Nev. at 240, 362 P.2d at 269.

The two issues on appeal also require this court to interpret NRS 278.0282 and former RMC section 18.06.404(d)(1)(b).² “Statutory construction is a question of law, which this court reviews de novo.” Kay, 122 Nev. at 1104, 146 P.3d at 804. Courts also apply a de novo standard of review when interpreting municipal code provisions. U.S. v. Iverson, 162 F.3d 1015, 1019 (9th Cir. 1998); Asphalt Specialt. v. City of Commerce City, 218 P.3d 741, 745 (Colo. App. 2009). When the language in a provision is clear and unambiguous, this court gives “effect to that meaning and will not consider outside sources beyond that statute.” NAIW v. Nevada Self-Insurers Association, 126 Nev. ___, ___, 225 P.3d 1265, 1271 (2010). If there is more than one reasonable interpretation of the statute, this court considers legislative intent and other similar statutory provisions when construing the statute’s language. Id.

II. The City complied with NRS 278.0282 when passing Resolution 6712

The City argues on appeal that it complied with Nevada law, specifically NRS 278.0282, when passing amendments to the Reno Master Plan in Resolution 6712. According to the City, it properly adopted Resolution 6712 because its language stated that the master-plan amendments would only become effective after the Regional Planning Commission determined that the proposed amendments conformed to the regional plan. Respondents argue that the City violated NRS 278.0282 because it adopted the master-plan amendments prior to the Regional

²The City amended RMC section 18.06.404 on September 9, 2009, after the district court issued its amended order in this case on June 5, 2008. Thus, we will analyze this matter in accordance with the version of RMC section 18.06.404 that was in effect on June 5, 2008.

Planning Commission's determination that the amendments conformed to the regional plan. We conclude that the City's argument has merit.

NRS 278.0282(1) states that "[b]efore the adoption or amendment of any master plan, . . . each governing body and any other affected entity shall submit the proposed plan or amendment to the regional planning commission." Once the governing body submits the proposed master-plan amendment, the Regional Planning Commission shall "determine whether the proposed plan or amendment conforms with the comprehensive regional plan." NRS 278.0282(1). If the commission concludes that the master-plan amendment does not conform to the regional plan, it must specify which parts of the amendment do not conform and explain its reasoning. Id.

In this case, the Reno City Council passed amendments that altered the land-use designations for Cold Springs in the Reno Master Plan. It conditionally approved these proposed amendments in Resolution 6712, before the Truckee Meadows Regional Planning Commission found that the amendments conformed to the Truckee Meadows Regional Plan. The City Council included a provision in Resolution 6712 that stated the amendments would only "become effective upon a determination of conformance by the Regional Planning Commission." After the City submitted the master-plan amendments to the Regional Planning Commission, the commission unanimously concluded that the proposed amendments conformed to the regional plan and the resolution became operative.

We conclude that the sequence of events used when passing Resolution 6712 complied with the procedures set forth in NRS 278.0282. Subsection 1 of NRS 278.0282 requires that a governing body submit

“proposed” amendments to the Regional Planning Commission prior to the amendment of a master plan. The term “proposed” indicates that the Regional Planning Commission must review master-plan amendments before they are ratified and become effective.

Caselaw draws a distinction between proposed amendments and ratified or effective amendments. See, e.g., Kimble v. Swackhamer, 94 Nev. 600, 602, 584 P.2d 161, 162 (1978) (the Legislature could “ratify or reject a proposed amendment to the federal constitution” (discussing Hawke v. Smith, 253 U.S. 221 (1920))); Williams v. Griffin, 91 Nev. 743, 745, 542 P.2d 732, 733 (1975) (agencies may refuse to issue permits when doing so would conflict with proposed ordinances that are not yet in effect); Maragliano v. Land Use Bd., 957 A.2d 213, 215 (N.J. Super. Ct. App. Div. 2008) (if a governing body proposes to amend a zoning ordinance, planning boards should not grant development approvals until the amendment takes effect). Because the City added a provision to Resolution 6712 that prevented the resolution from becoming effective until the Regional Planning Commission determined that the proposed master-plan amendments conformed to the regional plan, we conclude that the City complied with the express language in NRS 278.0282 when adopting Resolution 6712.

III. The City violated former RMC section 18.06.404(d)(1)(b) when passing Ordinance 5809

The City argues that the district court erred when it ordered that Ordinance 5809 be set aside because the City complied with former RMC section 18.06.404(d)(1)(b) when passing the ordinance. According to the City, this municipal code provision did not require the local government to make a finding setting forth detailed plans about water

services and infrastructure prior to the approval of Ordinance 5809. Respondents argue that the City failed to comply with former RMC section 18.06.404(d)(1)(b) when enacting Ordinance 5809 because it did not make a sufficient finding about the plans for water services and infrastructure.

A. The requirements of former RMC section 18.06.404(d)(1)(b)

Former RMC section 18.06.404(d)(1)(b) mandated that when approving a zoning-map amendment, the Reno Planning Commission and City Council must find that there is a plan to support proposed development with sufficient services and infrastructure. It stated the following:

In approving any zoning map amendment, the planning commission and city council shall find the following:

....

- b. The change in zoning represents orderly development of the city and there are, or are planned to be adequate services and infrastructure to support the proposed zoning change and existing uses in the area

RMC § 18.06.404(d)(1)(b) (2008). Because this version of the code was in effect at the time when the district court issued its amended order, we analyze the appeal under former RMC section 18.06.404(d)(1)(b).³

³Similar to former RMC section 18.06.404(d)(1)(b), the current version of RMC section 18.06.404(d)(1) states that the Reno Planning Commission and City Council “shall make findings regarding the requirements of NRS 278.250(2), as applicable, and the proposed amendment’s conformity to the City of Reno Master Plan.” Pursuant to NRS 278.250(2), local governments must design zoning regulations to, among other things, “preserve the quality of air and water resources” and

continued on next page . . .

In this case, the parties acknowledge that the existing water and sewer services in Cold Springs cannot support the proposed development and urbanization permitted by the change in zoning. Because Cold Springs' existing water and sewer services cannot support the proposed development, former RMC section 18.06.404(d)(1)(b) required the Reno Planning Commission and City Council to make a finding, when passing Ordinance 5809, regarding plans to supply adequate water services and infrastructure to support the proposed development. The City argues that it complied with this former code provision because it made findings which set forth that the details regarding the provision of water services and infrastructure would be established before development begins. According to the City, it was improper for the district court to require detailed plans about water services and infrastructure at the zoning and planning stage of the process.

We conclude that this is not a reasonable interpretation of former RMC section 18.06.404(d)(1)(b). Courts must construe ordinances in a manner that gives meaning to all of the terms and language. Bd. of County Comm'rs v. CMC of Nevada, 99 Nev. 739, 744, 670 P.2d 102, 105 (1983). Courts "should read each sentence, phrase, and word to render it meaningful within the context of the purpose of the legislation." Id. The City's interpretation that former RMC section 18.06.404(d)(1)(b) permits governing entities to defer findings or make broad conclusions about

... continued

"develop a timely, orderly and efficient arrangement of transportation and public facilities and services."

services and infrastructure would render the following phrase in the code to be meaningless: "the planning commission and city council shall find . . . there are, or are planned to be adequate services and infrastructure to support the proposed zoning change and existing uses in the area." Also, deferring the requirement to make a finding about plans for adequate services and infrastructure could prevent governing entities from designing proper zoning regulations that promote the orderly development of an area.

In contrast, respondents in this case interpret former RMC section 18.06.404(d)(1)(b) as requiring local governments to make a finding about plans for adequate services and infrastructure prior to the adoption of amendments to the master plan. This constitutes a reasonable interpretation of the former code provision. Pursuant to this provision's plain language, governing entities must make a finding during the zoning and planning stage of development about how officials plan to meet the water and infrastructure demands generated by the proposed zoning change. The provision's clear and unambiguous language does not permit governing entities to merely defer findings regarding plans for water services and infrastructure to a later date or to make vague conclusions that fail to articulate even a general plan for the provision of water services and infrastructure.

According to amici curiae, actual plans for water services and infrastructure cannot be created before local governments enact applicable zoning ordinances. However, the express language in former RMC section 18.06.404(d)(1)(b) does not require local governments or developers to submit complete, all-inclusive development plans prior to the approval of new zoning ordinances. Such a requirement would be redundant because

Nevada's statutory scheme already requires developers to submit detailed plans regarding water and sewer services during later stages in the development process. See, e.g., NRS 278.335; NRS 278.372; NRS 278.377; NRS 278A.540. As set forth above, the provision's plain language is subject to only one reasonable interpretation: local government must make a finding about plans for adequate services and infrastructure prior to the adoption of amendments to the master plan. In this finding, local government must set forth an estimate of the water services and infrastructure required to serve the proposed development facilitated by the zoning amendment and must state how the governing entity plans to meet this demand.

B. Substantial evidence does not show that the City made a sufficient finding about plans for services and infrastructure

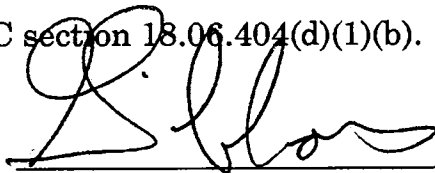
After reviewing the record in this case, we conclude that substantial evidence does not show that the City made a sufficient finding regarding how officials plan to meet the water demands and infrastructure needs generated by the proposed development in Cold Springs. When approving Ordinance 5809, the evidence shows that the Reno Planning Commission stated: "As future development projects are brought forward, issues such as sanitary sewer, water service and other critical infrastructure needs will be addressed." In addition, the Reno City Council made the following statement: "[W]hile the details of the provision of water and sewer will be required when the development is proposed, there is infrastructure in place that could be expanded, such as an existing sewer plant, and a water purveyor called Utilities, Inc. Alternatively, new utilities could be built by the developer."

These statements do not satisfy the requirements of former RMC section 18.06.404(d)(1)(b) because they do not articulate even a general plan to meet the potential demands for water services and infrastructure generated by the zoning change. While the City is not required to set forth detailed, all-inclusive development plans for water services and infrastructure, former RMC section 18.06.404(d)(1)(b) did require something more than the deferral of the issue or broad, evasive conclusions about how officials can build or expand utilities if necessary. See Annapolis Market v. Parker, 802 A.2d 1029, 1045-46 (Md. 2002) (findings of fact should be meaningful and should not merely set forth broad conclusions, make boilerplate resolutions, or defer issues to a later date). The parties in this case agree that the existing water services and infrastructure cannot support the potential development in Cold Springs, and merely deferring the subject or broadly concluding that a developer could build new utilities if necessary oversimplifies complex water-supply issues. Because the City did not satisfy the applicable provision of the RMC, we conclude that the district court did not err by ordering the City to set aside Ordinance 5809.

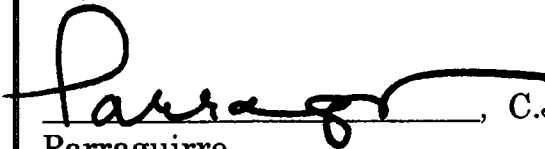
CONCLUSION

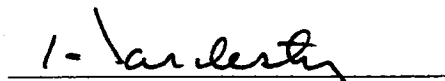
We conclude that the City did not violate NRS 278.0282 by conditionally approving amendments to the Reno Master Plan prior to submitting the amendments to the Regional Planning Commission for review. The City complied with NRS 278.0282 because Resolution 6712 provided that the proposed master-plan amendments would become effective after the Regional Planning Commission determined that they conformed to the regional plan. We further conclude that the City violated former RMC section 18.06.404(d)(1)(b) because there is no substantial

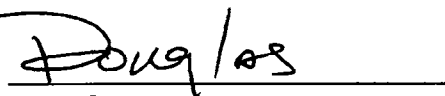
evidence showing that it made an adequate finding about planned water services and infrastructure before passing Ordinance 5809. Accordingly, we reverse the district court's finding that the City failed to properly amend the Reno Master Plan and affirm the district court's conclusion that the City violated former RMC section 18.06.404(d)(1)(b).


Gibbons, J.

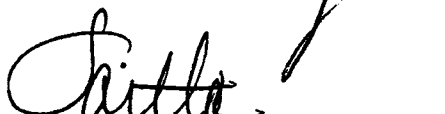
We concur:


Parraguirre, C.J.


Hardesty, J.


Douglas, J.


Cherry, J.


Saitta, J.

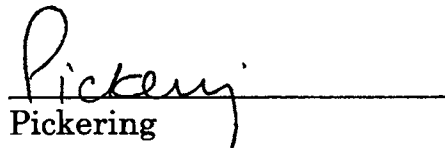

Pickering, J.

EXHIBIT 12

EUREKA COUNTY v. STATE ENGINEER 131 Nev. 846, 359 P.3d 1114 (2015)

Nevada Supreme Court Authority Relevant to Grounds II and IV - ZC26-2

Purpose. The appeal cites *Eureka County v. State Engineer* for the limited Nevada administrative-law principle that a decision requiring a present determination must be supported by substantial evidence then in the record; information necessary to support that determination cannot simply be left for later development.

What the Court held. In a water-rights proceeding, the State Engineer approved applications while leaving the content of a future monitoring, management and mitigation plan for later. The Nevada Supreme Court concluded that the approval decision had to be made upon presently known substantial evidence rather than information to be determined in the future, and that the State Engineer could not defer the necessary mitigation determination to a later date.

Important limitation. *Eureka County* is a water-rights case applying NRS 533.370(2), not a Churchill County zoning case. This exhibit does not contend that the water-right statutes govern ZC26-2. Churchill County's required zoning findings arise independently under CCC §16.08.060(E). The opinion is offered only for the Nevada Supreme Court's treatment of presently required findings, substantial evidence, later-developed information, opportunity to challenge evidence, and judicial review.

Connection to this appeal. Grounds II and IV do not argue that final engineering, final utility design, or every later permit must exist before rezoning. They challenge whether the record contained enough presently known, planning-level evidence to support findings the County was required to make at the rezoning stage when permanent power, water and septic were described as matters that would come later.

Key pages. The most directly relevant discussion appears on source pages 14-16. The Court requires presently known substantial evidence, explains why protestants must be able to challenge evidence before approval, requires a decision sufficiently supported to permit judicial review, rejects deferral of the necessary mitigation determination, and expressly cites *City of Reno v. Citizens for Cold Springs*.

Source and highlighting. The complete 17-page opinion is included. Yellow highlighting is limited to passages most directly supporting the proposition for which the appeal cites the case; the complete opinion is retained for context.

131 Nev., Advance Opinion 84
IN THE SUPREME COURT OF THE STATE OF NEVADA

EUREKA COUNTY, A POLITICAL
SUBDIVISION OF THE STATE OF
NEVADA; KENNETH F. BENSON,
INDIVIDUALLY; DIAMOND CATTLE
COMPANY, LLC, A NEVADA LIMITED
LIABILITY COMPANY; AND MICHEL
AND MARGARET ANN ETCHEVERRY
FAMILY, LP, A NEVADA REGISTERED
FOREIGN LIMITED PARTNERSHIP,
Appellants,

vs.

THE STATE OF NEVADA STATE
ENGINEER; THE STATE OF NEVADA
DIVISION OF WATER RESOURCES;
AND KOBEH VALLEY RANCH, LLC, A
NEVADA LIMITED LIABILITY
COMPANY,
Respondents.

No. 61324

FILED

OCT 29 2015

TRACIE K. LINDEMAN
CLERK OF SUPREME COURT
BY *[Signature]*
CHIEF DEPUTY CLERK

MICHEL AND MARGARET ANN
ETCHEVERRY FAMILY, LP, A
NEVADA REGISTERED FOREIGN
LIMITED PARTNERSHIP; DIAMOND
CATTLE COMPANY, LLC, A NEVADA
LIMITED LIABILITY COMPANY; AND
KENNETH F. BENSON, AN
INDIVIDUAL,
Appellants,

vs.

STATE ENGINEER OF NEVADA,
OFFICE OF THE STATE ENGINEER,
DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES; AND
KOBEH VALLEY RANCH, LLC, A
NEVADA LIMITED LIABILITY
COMPANY,
Respondents.

No. 63258

Consolidated appeals challenging district court orders denying judicial review of the State Water Engineer's decisions affecting water rights. Seventh Judicial District Court, Eureka County; Dan L. Papez, Judge.

Reversed and remanded.

Allison, MacKenzie, Ltd., and Karen A. Peterson, Jennifer Mahe, and Dawn Ellerbrock, Carson City; Theodore Beutel, District Attorney, Eureka County,
for Appellant Eureka County.

Schroeder Law Offices, P.C., and Laura A. Schroeder and Therese A. Ure, Reno,
for Appellants Kenneth F. Benson; Diamond Cattle Company, LLC; and Michel and Margaret Ann Etcheverry Family, LP.

Adam Paul Laxalt, Attorney General, and Micheline N. Fairbank, Senior Deputy Attorney General, Carson City,
for Respondents the State of Nevada Division of Water Resources and the State Engineer.

Parsons Behle & Latimer and Ross E. de Lipkau and John R. Zimmerman, Reno; Parsons Behle & Latimer and Francis M. Wikstrom, Salt Lake City, Utah,
for Respondent Kobeh Valley Ranch, LLC.

Dyer, Lawrence, Flaherty, Donaldson & Prunty and Francis C. Flaherty, Carson City,
for Amicus Curiae NV Energy, Inc.

Lewis Roca Rothgerber, LLP, and Daniel F. Polsenberg, Las Vegas; Taggart & Taggart, Ltd., and Paul G. Taggart, Carson City; Gregory J. Walch and Dana R. Walsh, Las Vegas,
for Amici Curiae Municipal Water Purveyors.

BEFORE THE COURT EN BANC.

*OPINION*¹

By the Court, PICKERING, J.:

These consolidated appeals challenge the district court's orders denying judicial review of the State Water Engineer's decisions affecting water rights. Under NRS 533.370(2), the State Engineer "shall reject" an application for a proposed use of water or change of existing water rights where that "proposed use or change conflicts with existing rights." The parties ask this court to determine whether this section allows for the State Engineer to take into account the applicant's ability to mitigate the drying up of existing rights holders' water sources when determining if a proposed use or change will conflict with existing rights. However, even assuming that under NRS 533.370(2) the State Engineer has authority to grant an application that conflicts with existing rights based upon a determination that the applicant will be able to mitigate, the State Engineer's decision to approve the applications and issue the permits at issue here is not supported by sufficient evidence that successful mitigation efforts may be undertaken so as to dispel the threat to the existing rights holders. We thus reverse the district court's decision denying judicial review of the State Engineer's decisions and remand.

¹We originally reversed and remanded in an unpublished order. Respondents and other interested persons not party to these appeals moved to publish the order as an opinion. We grant the motions and publish this opinion in place of our earlier order. See NRAP 36(f).

I.

At the heart of this appeal is the Mount Hope Mine, a large proposed molybdenum mine that General Moly, Inc. seeks to establish in Eureka County. The mine's contemplated life is 44 years, and will require an estimated total of 11,300 acre feet of water per year (afa). To provide the water for the mine, General Moly seeks to pump groundwater by well from the Kobeh Valley and Diamond Valley groundwater basins, basins that already source many existing water rights, which will cause a drawdown of the water table throughout the two valleys. According to a water resources monitoring plan created by Eureka Moly, LLC, a subsidiary of General Moly, the vast majority of this water for the Mount Hope Mine "will be consumptively used in processing activities of the [mining] Project (*i.e.*,] no water will be returned to the aquifer)."

General Moly created respondent Kobeh Valley Ranch, LLC (KVR) to hold and control the water rights for the project. Water rights already appropriated by a predecessor entity associated with the mining project were transferred to KVR, as were existing applications to appropriate water that the predecessor had filed in 2005. Between 2006 and 2010, KVR also filed numerous applications to change the point of diversion, the place of use, and the manner of use of other of its existing water rights. Appellant Eureka County protested KVR's applications on numerous grounds, including that KVR's groundwater appropriations would conflict with existing rights under NRS 533.370(2). A number of holders of senior water rights sourced in Kobeh Valley and Diamond Valley also protested on those, and other, grounds. The State Engineer originally held a hearing on the applications, then pending, in 2008, after which he approved some of KVR's applications over these objections, but

upon review the district court vacated the ruling and remanded the matter back to the State Engineer for a new hearing.

The State Engineer held another hearing in 2010, in which he accepted the evidence presented at the first hearing and allowed additional evidence to be presented regarding specific water usage at the proposed mining project. The State Engineer ultimately granted all of KVR's applications in his Ruling Number 6127.

Pertinent to this appeal, the State Engineer recognized that certain springs located on the Kobeh Valley floor that are in hydrologic connection with the underlying water table and that source existing, senior water rights would be "impacted" by KVR's pumping. However, the State Engineer found that KVR could fully mitigate any impact, and to that end required KVR to prepare, with the assistance of Eureka County, a monitoring, management, and mitigation plan (3M Plan) for approval by the State Engineer before KVR diverted any water. The State Engineer then issued KVR the various use and change permits requested.

Eureka County, as well as appellants Kenneth F. Benson, Diamond Cattle Company, LLC, and Michel and Margaret Ann Etcheverry Family, LP, (collectively referred to as Benson-Etcheverry), all of whom hold existing, senior rights in the valleys, petitioned the district court for judicial review of Ruling 6127. The district court denied the petition, finding that substantial evidence supported the State Engineer's decision that KVR would be able to mitigate any adverse impacts to existing water rights. The district court further held that NRS 533.370(2) "does not prevent the State Engineer from granting applications that may impact existing rights if the existing right can be protected through mitigation, thus avoiding a conflict with existing rights."

While Ruling 6127 was before the district court, KVR developed a 3M Plan in coordination with Eureka County. Though the State Engineer approved the 3M Plan, he retained ultimate authority over it, stating that the 3M Plan was approved with the "understanding that components of the Plan are subject to modification based on need, prior monitoring results, or changes in the approved water rights." Benson-Etcheverry petitioned the district court for judicial review of this decision, but the district court denied that petition as well.

Eureka County and Benson-Etcheverry appeal the district court's order denying judicial review of Ruling 6127. Benson-Etcheverry also appeal the district court's subsequent order denying judicial review of the State Engineer's approval of the 3M Plan.

II.

A.

The State Engineer, who is charged with administering water rights in this state, *Desert Irrigation, Ltd. v. State*, 113 Nev. 1049, 1061, 944 P.2d 835, 843 (1997), is required to approve applications to appropriate new water rights or to change the place, manner, or use of existing water rights if the applicant meets certain statutory requirements. NRS 533.370(1). However:

Except as otherwise provided in subsection 10 [which excepts applications for environmental or temporary permits], where there is no unappropriated water in the proposed source of supply, or *where its proposed use or change conflicts with existing rights* or with protectable interests in existing domestic wells as set forth in NRS 533.024, or threatens to prove detrimental to

the public interest, the State Engineer *shall reject the application and refuse to issue the requested permit.*

NRS 533.370(2) (emphases added).

The State Engineer and KVR submit that the State Engineer may conditionally grant proposed use or change applications on the basis of future successful mitigation, thereby ensuring that the new or changed appropriation does not conflict with existing rights, in accordance with NRS 533.370(2). This court has never addressed whether the statute may be read in this manner, and we need not do so at this time. Even assuming that the State Engineer may grant a proposed use or change application on the basis of the appropriator's ability to successfully mitigate and bring the existing water rights back to their full beneficial use, substantial evidence does not support the State Engineer's decision that this is the case here. *Town of Eureka v. Office of State Eng'r of State of Nev., Div. of Water Res.*, 108 Nev. 163, 165, 826 P.2d 948, 949 (1992) ("With questions of fact, the reviewing court must limit itself to a determination of whether substantial evidence in the record supports the State Engineer's decision.").

B.

The State Engineer in his Ruling 6127 recognized that there would be "extensive" drawdown of the water table in Kobeh Valley near KVR's main well field area due to KVR's groundwater pumping, which could "impact" existing "rights on springs and streams in hydrologic connection with the water table . . . includ[ing] valley floor springs." He also recognized that:

Water rights that could potentially be impacted are those rights on the valley floor where there is predicted drawdown of the water table due to

mine pumping. The Applicant recognizes that certain water rights on springs in Kobeh Valley are likely to be impacted by the proposed pumping. These springs produce less than one gallon per minute and provide water for livestock purposes.

(footnotes omitted).² But the evidence to which the State Engineer cited demonstrates that more than just an “impact” to these low-flow springs would occur. For instance, the State Engineer cited to KVR’s hydrogeology expert Terry Katzer’s testimony at the 2010 hearing that KVR’s pumping would dry up certain springs and stock watering wells:

Q: Okay. Will the pumping over time cause impacts to springs in direct stock watering wells in the floor of Kobeh Valley?

A: I believe it will. And I can’t name the springs because I am not that familiar with them. Mud Springs, for instance, I know where that is. I’ve been there. It will probably dry that up with time. And other springs that are in close proximity to the well field.

Q: Stock watering wells?

A: Stock watering wells, yes, probably.

Flow modeling reports by KVR’s hydrogeology and groundwater modeling expert, Dwight Smith, to which the State Engineer also cited, confirmed this assessment:

Springs located in lower altitudes in the Roberts Mountains . . . are more likely to be impacted due

²Eureka County challenges the “less than a gallon per minute” finding, but KVR’s 2010 flow modeling report indicates that these springs produced less than a gallon per minute. And, while the inventory KVR prepared in 2011 shows an estimated less than five gallon flow for Mud Spring, this is not inconsistent with a less than one gallon flow finding.

to closer proximity to the KVCWF[Kobeh Valley Central Well Field], resulting in larger predicted drawdown at these locations. Discharge at Mud Spring (Site 721) and Lone Mountain Spring (Site 742), located near the southeast edge of the KVCWF near proposed well 226, are predicted to be impacted and will likely cease to flow based on predicted drawdowns of 40 to 50 feet. Both of these springs discharge less than approximately one gallon per minute.

Smith also testified that Mud Springs and another spring called Lone Mountain Springs would cease to flow fairly soon after KVR begins pumping.

The federal Bureau of Land Management (BLM) claims unadjudicated reserved rights sourced from Lone Mountain Springs. And respondent Etcheverry Family, LP, holds permitted existing rights in Mud Springs, rights consisting of 10.86 afa to use for stock watering purposes.

Therefore, contrary to the State Engineer's, KVR's, and amici's assertions, KVR's pumping would not merely impact existing water rights; the very evidence upon which the State Engineer relied demonstrates that KVR's appropriation would cause the complete depletion of the source of existing water rights. The Legislature did not define exactly what it meant by the phrase "conflicts with" as used in NRS 533.370(2), but if an appropriation that would completely deplete the source of existing water rights does not "conflict with" those existing rights, then it is unclear what appropriation ever could. Furthermore, dictionary definitions from around the time a statute is enacted can aid this court in deciphering that statute's meaning, *Douglas v. State*, 130 Nev., Adv. Op. 31, 327 P.3d 492, 494 (2014), and contemporaneous reference material with the Legislature's adoption of the "conflicts with" aspect of NRS 533.370(2), defines "conflict," in verb form, as "[t]o be in opposition; be contrary or at

variance." See 2 *The Century Dictionary and Cyclopedia, with a New Atlas of the World*, at 1186 (rev. enl. ed. 1911); 1913 Nev. Stat., ch. 140, § 63. To the extent that KVR's proposed appropriations would deplete the water available to satisfy existing rights at issue, they are undeniably "in opposition" thereto, and thus "conflict with" the existing rights under NRS 533.370(2).³

C.

Considered separate and apart from any potential mitigation techniques, the appropriations in question are in conflict with existing water rights in the valleys. But the State Engineer found KVR could implement mitigation techniques that would ameliorate the depletion of Mud Springs: "The State Engineer finds that this flow loss can be adequately and fully mitigated by the Applicant should predicted impacts occur." Furthermore, because "the only way to fully ensure that existing water rights are protected is by closely monitoring hydrologic conditions while groundwater pumping occurs," the State Engineer found that "a monitoring, management and mitigation plan prepared with input from Eureka County must be approved by the State Engineer prior to pumping groundwater for the project." The State Engineer thus concluded that: "Based upon substantial evidence and testimony, and the monitoring, management and mitigation plan requirement, the State Engineer

³The State Engineer's ruling states that though the BLM originally protested KVR's appropriations, it withdrew its protests "after reaching a stipulation on monitoring, management and mitigation" with KVR. It seems the State Engineer assumed this was sufficient to dispense with the conflict under NRS 533.370(2), but this is a less than clear conclusion. In any event, Etcheverry Family, LP, has not withdrawn its protest of KVR's applications.

concludes that the approval of the applications will not conflict with existing water rights"

Nowhere in the ruling, however, does the State Engineer articulate what mitigation will encompass, even in the most general sense. And evidence of what that mitigation would entail and whether it would indeed fully restore the senior water rights at issue is lacking: there was no mitigation plan in the record before the district court or in existence when KVR's applications were granted. Indeed, KVR's representative Patrick Rogers acknowledged that he didn't "know what we [General Moly] would propose in a mitigation plan. A mitigation plan hasn't been developed yet. It would be speculative to say what we would or would not propose."

The State Engineer and KVR point to KVR's experts' testimony as evidence that mitigation could occur and would be successful. But Katzer, an hydrology expert, testified only that there were "a variety of [mitigation] techniques. You could increase the well if it's being fed by a well or you could run a pipeline to it from part of the distribution system." KVR's other expert, Smith, similarly testified that if predicted water table drawdown were to occur due to KVR's pumping, "certainly there can be mitigation measures taken, many of which could include shifting[] pumping around the well field as an easy example." While KVR's experts testified as to the existence of a few possible mitigation techniques, they did not specify what techniques would work, much less techniques that could be implemented to mitigate the conflict with the existing rights in this particular case. And concerns over precisely how KVR, or its parent company Eureka Moly, would mitigate these conflicts are not without cause: Martin Etcheverry testified that after KVR did some experimental

pumping, one of his springs, Nichols Springs, was noticeably lower than before the pumping and that it had not yet returned to its pre-pumping levels. And according to Eureka County's natural resource manager, the Nichols Springs lowering was brought to Eureka Moly's attention multiple times, including at a meeting at the BLM's Battle Mountain office, but that neither KVR nor Eureka Moly had done anything to address the lowering of that spring.

The State Engineer and KVR alternatively assert the existing rights holders conceded that mitigation could be accomplished. But the existing rights holders, including Martin Etcheverry, merely recognized in their 2010 hearing testimony that they would be satisfied if KVR could completely and successfully mitigate the interference with their rights.

The State Engineer implies on appeal that KVR's mitigation could encompass providing substitute water to the senior rights holders by arguing that said holders are entitled only to the beneficial use of the amount of their water rights, and have no right to the historical source of their water rights. *See Desert Irrigation, Ltd. v. State*, 113 Nev. 1049, 1059, 944 P.2d 835, 842 (1997) (“[E]ven those holding certificated, vested, or perfected water rights do not own or acquire title to water. They merely enjoy the right to beneficial use.”). But to the extent KVR's mitigation would involve substitute water sources—which is not reflected in the State Engineer's decision or the evidence that was presented to him—there was no evidence before the State Engineer that KVR applied for or committed certain of its already obtained water rights to mitigation or where the substituted water would otherwise come from. And, using the State Engineer's numbers regarding the amount of water in the basin, there may not be any water left to use for mitigation after KVR's appropriation.

The State Engineer found Kobeh Valley had 15,000 afa total. KVR's appropriation is 11,300 afa, and the other committed rights had 1,100 afa, which left 2,600 afa for future appropriation. However, there is 5,530 afa in nonadjudicated claims to vested or reserved rights on file in the State Engineer's office.

This is setting aside the further, specious assumption that water from a different source would be a sufficient replacement. Take, for example, the testimony given by an existing rights holder before the State Engineer that he had seen problems before with piping in water for animals because the pipes can freeze and interfere with the flow in the extreme winter cold. Given these, seemingly supported, concerns over such potential problems, it is therefore unclear that substitution water, if available, would be sufficient. *See, e.g., Weibert v. Rothe Bros., Inc.*, 618 P.2d 1367, 1373 (Colo. 1980) ("In order to determine the adequacy of the [augmentation] plan to accomplish its intended purpose, it is necessary to consider the adequacy of the replacement water rights."); *see also Rocky Ford Irrigation Co. v. Kents Lake Reservoir Co.*, 135 P.2d 108, 114 (Utah 1943) (examining whether the exchange of water deteriorates water quality or quantity to such a degree as to "materially impair[] the use").

Added to this, a surface water rights holder may be found to have abandoned its right if it no longer delivers the water or maintains the source of diversion. NRS 533.060(4)(a)-(d). Requiring that existing rights holders use water other than from the source that they currently have rights in might mean the existing rights holder would need to obtain a new permit to appropriate that new water. *See* NRS 533.060(5) ("Any such right to appropriate any of the water must be initiated by applying to the State Engineer for a permit to appropriate the water as provided in

this chapter.”). KVR did not address before the State Engineer this potential obstacle to providing water from an alternate source to mitigate, and neither did the State Engineer’s ruling.

Finally, KVR asserts that the State Engineer’s determination that “it is readily feasible to avoid conflicts when mitigating impacts to water sources that produce relatively minor amounts of water” merely reflects the State Engineer’s “experience and common sense.” But this is precisely the problem with the State Engineer’s ruling: though the State Engineer certainly may use his experience to inform his decision making, his decisions must be supported by substantial evidence in the record before him, which is not the case here. *Town of Eureka*, 108 Nev. at 165, 826 P.2d at 949.

D.

Essentially, and with all other arguments aside, the State Engineer and KVR’s position is that the State Engineer may leave for a later day, namely the day the 3M Plan is put before him, the determination of exactly what KVR’s mitigation would entail. But the State Engineer’s decision to grant an application, which requires a determination that the proposed use or change would not conflict with existing rights, NRS 533.370(2), must be made upon presently known substantial evidence, rather than information to be determined in the future, for important reasons.

First, those who protest an application to appropriate or change existing water rights must have a full opportunity to be heard, a right that includes the ability to challenge the evidence upon which the State Engineer’s decision may be based. *Revert v. Ray*, 95 Nev. 782, 787, 603 P.2d 262, 264 (1979); see also NRS 533.365(5) (“Each applicant and each protestant shall... provide to the State Engineer and to each

protestant and each applicant information required by the State Engineer relating to the application or protest.”). *Cf. Bowman Transp., Inc. v. Arkansas-Best Freight Sys., Inc.*, 419 U.S. 281, 288 n.4 (1974) (“[T]he Due Process Clause forbids an agency to use evidence in a way that forecloses an opportunity to offer a contrary presentation.”). This necessarily means that the opportunity to challenge the evidence must be given *before* the State Engineer grants proposed use or change applications. Those who protest an application’s grant cannot be forced to wait and challenge a future 3M Plan because, as Benson-Etcheverry note: “The appeal as to Ruling No. 6127 can result in vacating the Ruling, among other remedies. However, appeal of the 3M Plan can only result in vacating the Plan.” In other words, challenging the sufficiency of a later developed mitigation plan cannot undo a decision to grant applications for a proposed use or change that may have been erroneous. And allowing the State Engineer to grant applications conditioned upon development of a future 3M Plan when the resulting appropriations would otherwise conflict with existing rights, could potentially violate protestants’ rights to a full and fair hearing on the matter, a rule rooted in due process. *Revert*, 95 Nev. at 787, 603 P.2d at 264.

Furthermore, the State Engineer’s decision to grant an application must be sufficiently explained and supported to allow for judicial review. *Id.*, 603 P.2d at 265; *see also Port of Jacksonville Mar. Ad Hoc Comm., Inc. v. U.S. Coast Guard*, 788 F.2d 705, 708 (11th Cir. 1986) (even under deferential substantial evidence review, courts must not merely “rubber stamp” agency action: they must determine that the “agency articulated a rational connection between the facts presented” and the decision) (internal quotation omitted). The State Engineer thus may

not defer the determination of what mitigation would encompass to a later date: even if he may grant applications where the resulting appropriations would conflict with existing rights based upon the finding that the applicant would be able to successfully mitigate that deleterious effect, an assumption we do not adopt today, the finding must be based upon evidence in the record to support that mitigation would be successful and adequate to fully protect those existing rights. *See City of Reno v. Citizens for Cold Springs*, 126 Nev. 263, 276, 236 P.3d 10, 18-19 (2010) (law requiring local governments to make a finding about plans for adequate services and infrastructure prior to amending a master plan to allow further development “require[d] something more than the deferral of the issue or broad, evasive conclusions about how officials can build or expand utilities if necessary”).

III.

In sum, substantial evidence does not support the State Engineer’s finding that KVR would be able to “adequately and fully” mitigate the fact that its groundwater appropriations will cause Kobeh Valley springs that sources existing rights to cease to flow. The State Engineer’s decision to grant KVR’s applications, when the result of the appropriations would conflict with existing rights, and based upon unsupported findings that mitigation would be sufficient to rectify the conflict, violates the Legislature’s directive that the State Engineer must deny use or change applications when the use or change would conflict with existing rights. NRS 533.370(2). As appellants have met their burden to show the State Engineer’s decision was incorrect, NRS 533.450(10), the State Engineer’s decision to grant KVR’s applications cannot stand.

We therefore reverse and remand these matters to the district court for proceedings consistent with this opinion.⁴ Because we reverse and remand on this basis, we do not reach the remaining issues raised in these consolidated appeals.

Pickering, J.
Pickering

We concur:

Hardesty, C.J.
Hardesty

Douglas, J.
Douglas

Saitta, J.
Saitta

Parraguirre, J.
Parraguirre

Cherry, J.
Cherry

Gibbons, J.
Gibbons

⁴From the record and Ruling 6127, it is unclear which of KVR's applications for proposed use or change in Kobeh Valley, if it can be pinpointed, is the appropriation that will cause the springs to dry up. Therefore, we must overturn the entire decision.