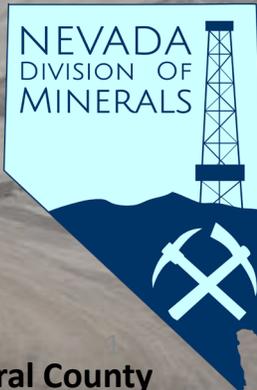


# *Overview of Current Mineral Production and Development Activity in Nevada*

**GSN 2022 Symposium  
May 2, 2022**

**Michael Visher, Administrator  
Nevada Division of Minerals**



Isabella Pearl Mine, Mineral County

# Nevada Mining Summary

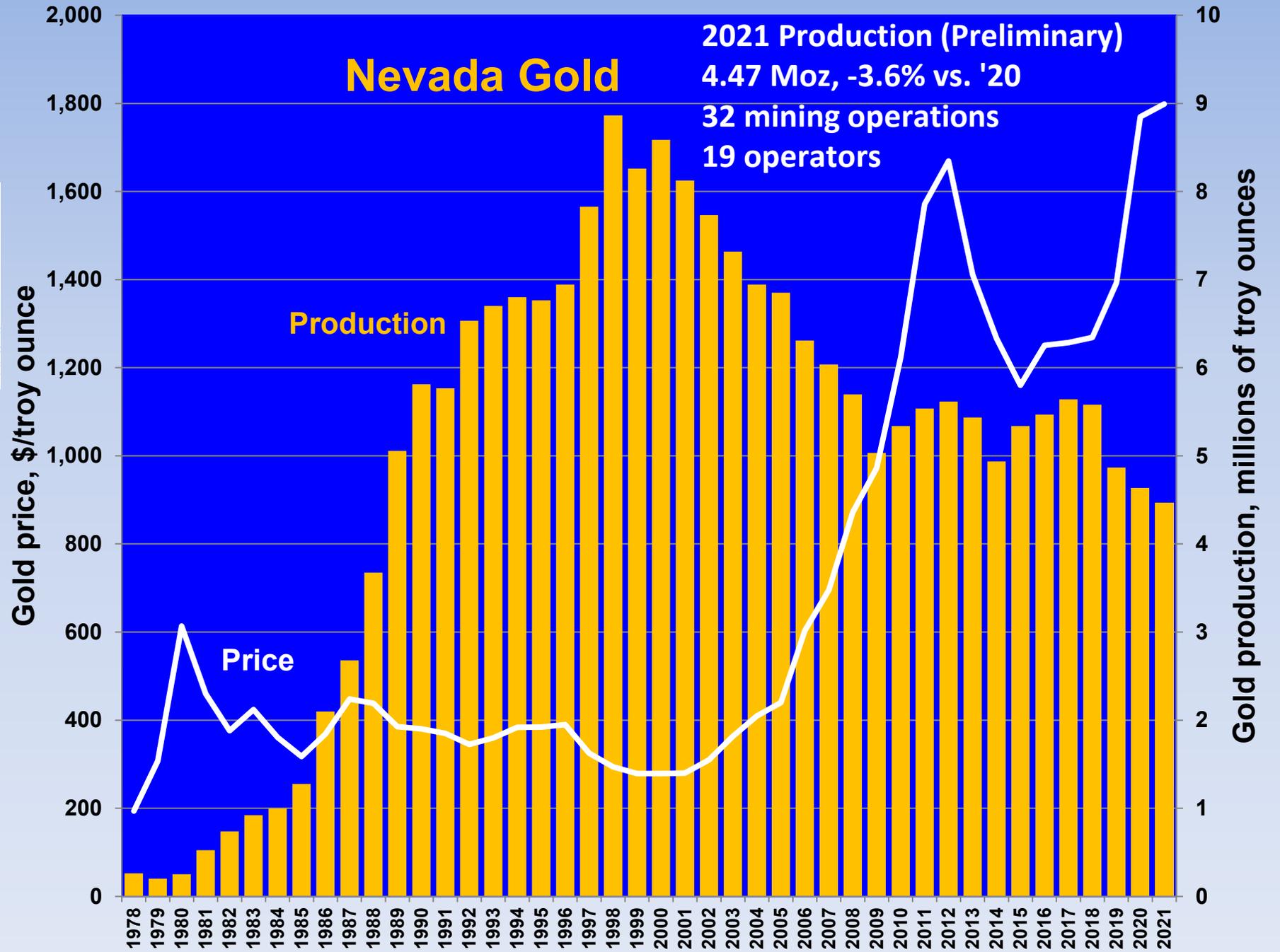
In 2021, Nevada mining employed >15,000 workers at an average salary of \$103,000 (\$49.52/hr)

Nevada produced 10% of all U.S. mineral production

Mines operate on less than ¼ of 1% of Nevada's 70,722,119 acres

- In 2021, NV produced 77% of all US gold and ranked 5th in global production (behind China, Australia, Russia, and Canada)
- 20+ commodities are produced from ~150 mines in Nevada
- \$14B impact to Nevada's economy
- Nevada is ranked 3<sup>rd</sup> best mining jurisdiction based on Investment Attractiveness Index (Fraser Institute, 2021)
- Lots of interest in exploration for, and production of, critical minerals
- Permitted surface disturbance of exploration and mining smaller than Storey County





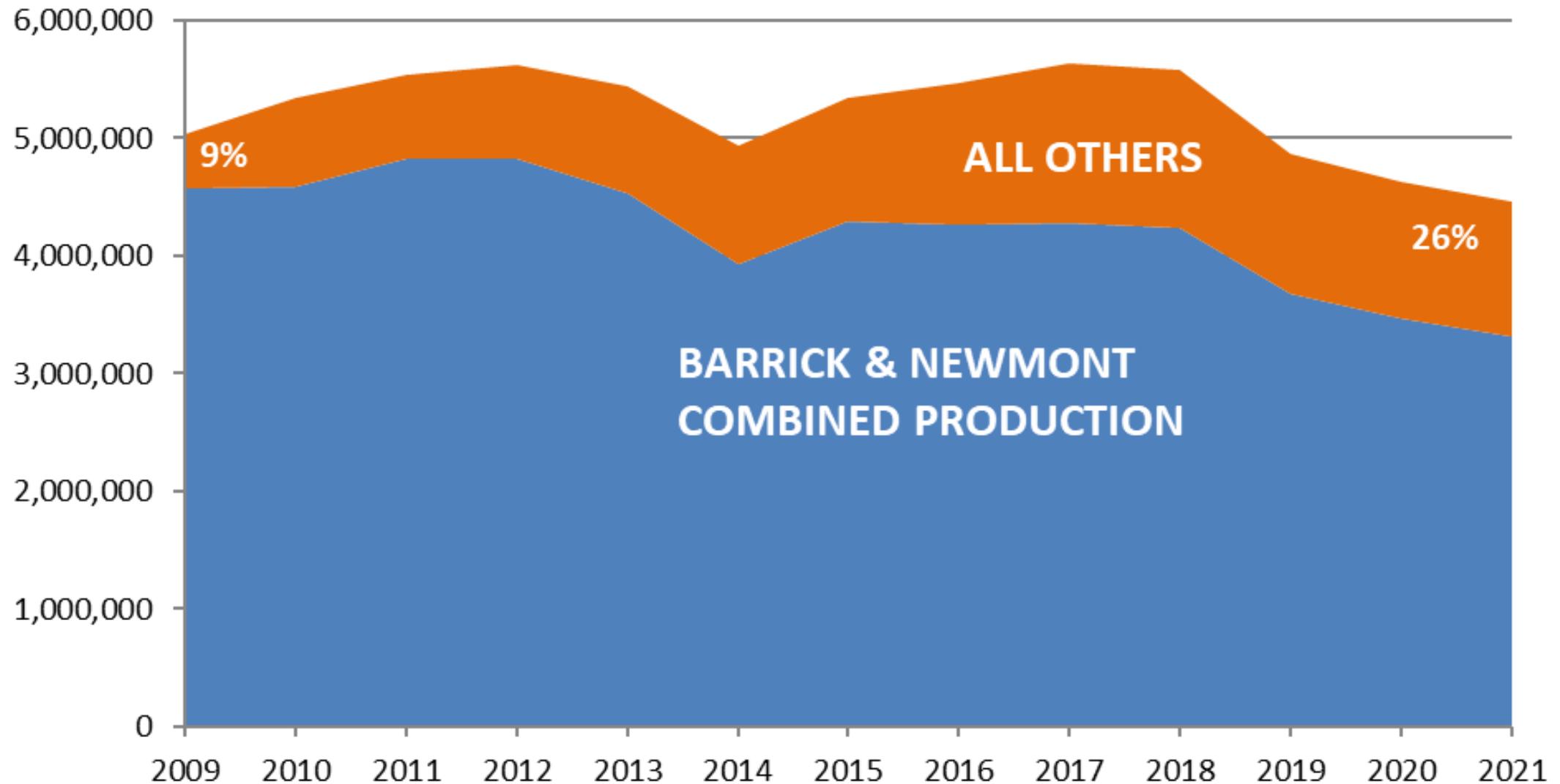
**2021 NEVADA METAL PRODUCTION, BY PRODUCER - Preliminary**

Ranked by gold production

<b>Operator</b>	<b>Gold (ozs)</b>	<b>Silver (ozs)</b>	<b>Copper (lbs)</b>	<b>Moly (lbs)</b>
<b>Nevada Gold Mines</b>	<b>3,318,854</b>	<b>1,600,225</b>	<b>36,736,179</b>	
<b>Kinross</b>	<b>450,567</b>	<b>808,072</b>		
<b>SSR Mining</b>	<b>235,282</b>	<b>4,285</b>		
<b>First Majestic Silver</b>	<b>98,303</b>	<b>1,809</b>		
<b>Hycroft Mining</b>	<b>56,045</b>	<b>397,546</b>		
<b>Florida Canyon Mining (Argonaut Gold)</b>	<b>51,175</b>	<b>27,681</b>		
<b>Walker Lane Minerals</b>	<b>46,459</b>	<b>44,551</b>		
<b>Calibre Gold</b>	<b>45,783</b>	<b>NR</b>		
<b>McEwen Mining</b>	<b>43,881</b>	<b>NR</b>		
<b>KGHM International</b>	<b>41,050</b>	<b>NR</b>	<b>123,700,000</b>	<b>240,000</b>
<b>Coeur</b>	<b>27,985</b>	<b>3,158,017</b>		
<b>Rawhide Mining</b>	<b>23,209</b>	<b>126,510</b>		
<b>I80 Gold</b>	<b>17,442</b>	<b>3,500</b>		
<b>Gold Acquisition Corp.</b>	<b>5,388</b>	<b>12,773</b>		
<b>Borealis Mining</b>	<b>3,936</b>	<b>6,473</b>		
<b>Mineral Ridge Gold</b>	<b>1,827</b>	<b>1,154</b>		
<b>Nevada Copper</b>	<b>NR</b>	<b>NR</b>	<b>3,296,515</b>	
<b>Geo-Nevada</b>	<b>3</b>	<b>4</b>		
<b>Hecla (Klondex)</b>	<b>0</b>	<b>26,214</b>		
<b>Totals</b>	<b>4,467,189</b>	<b>6,218,814</b>	<b>163,732,694</b>	<b>240,000</b>

# Nevada Gold Mines Production Comparison

## 2009 - 2021 Annual Gold Production in Nevada

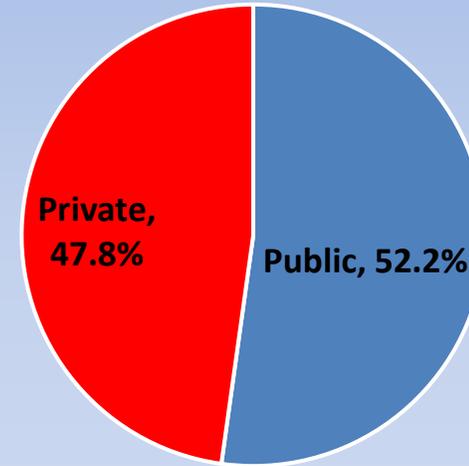


# Nevada Gold Production Statistics

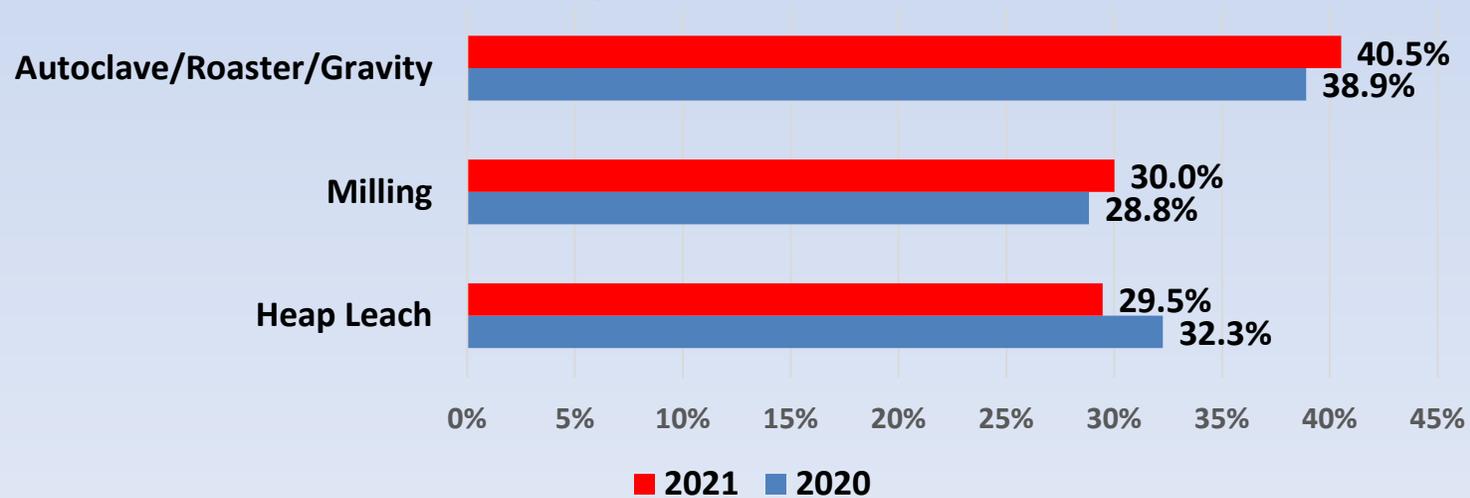
## Au % by Mine Type

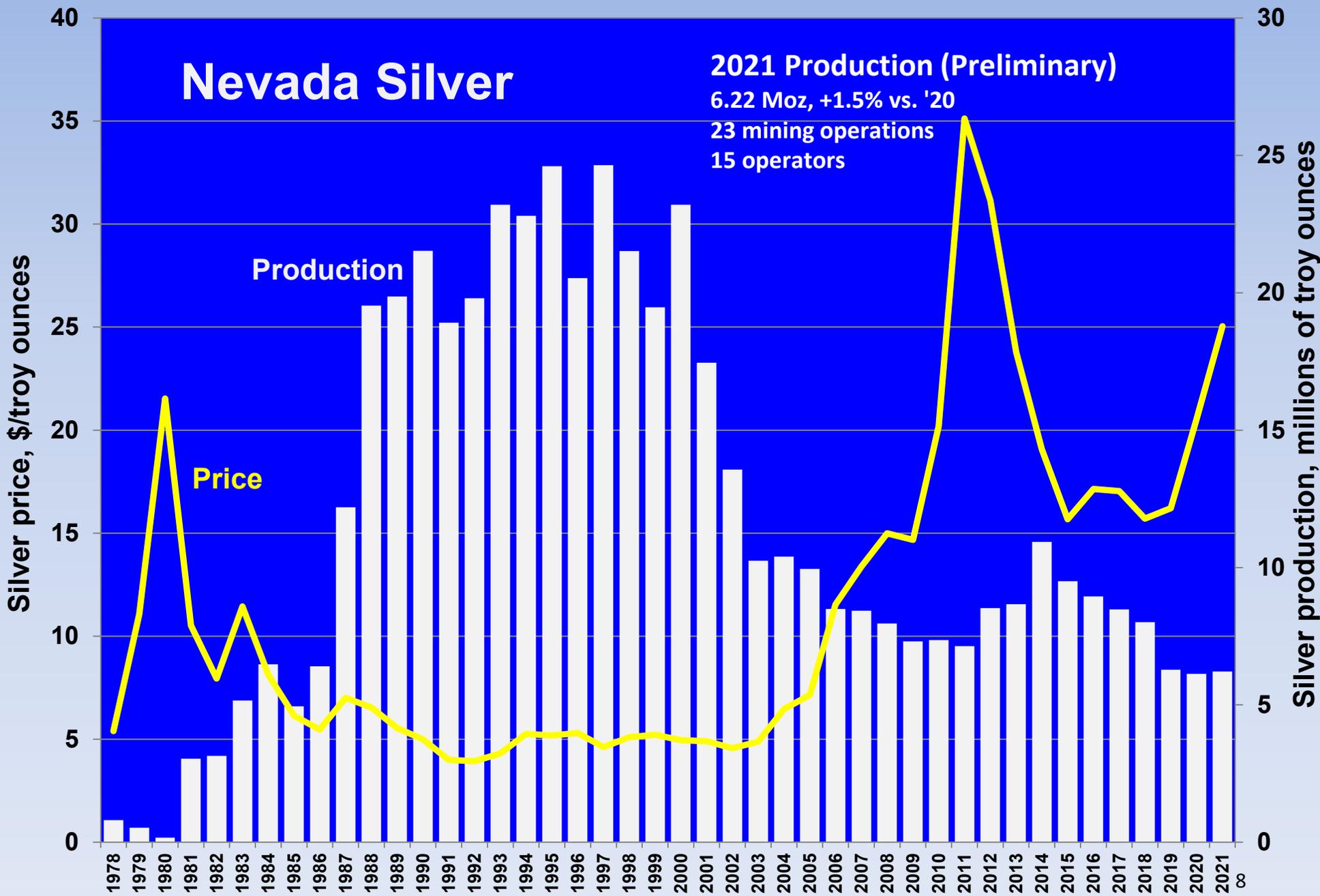


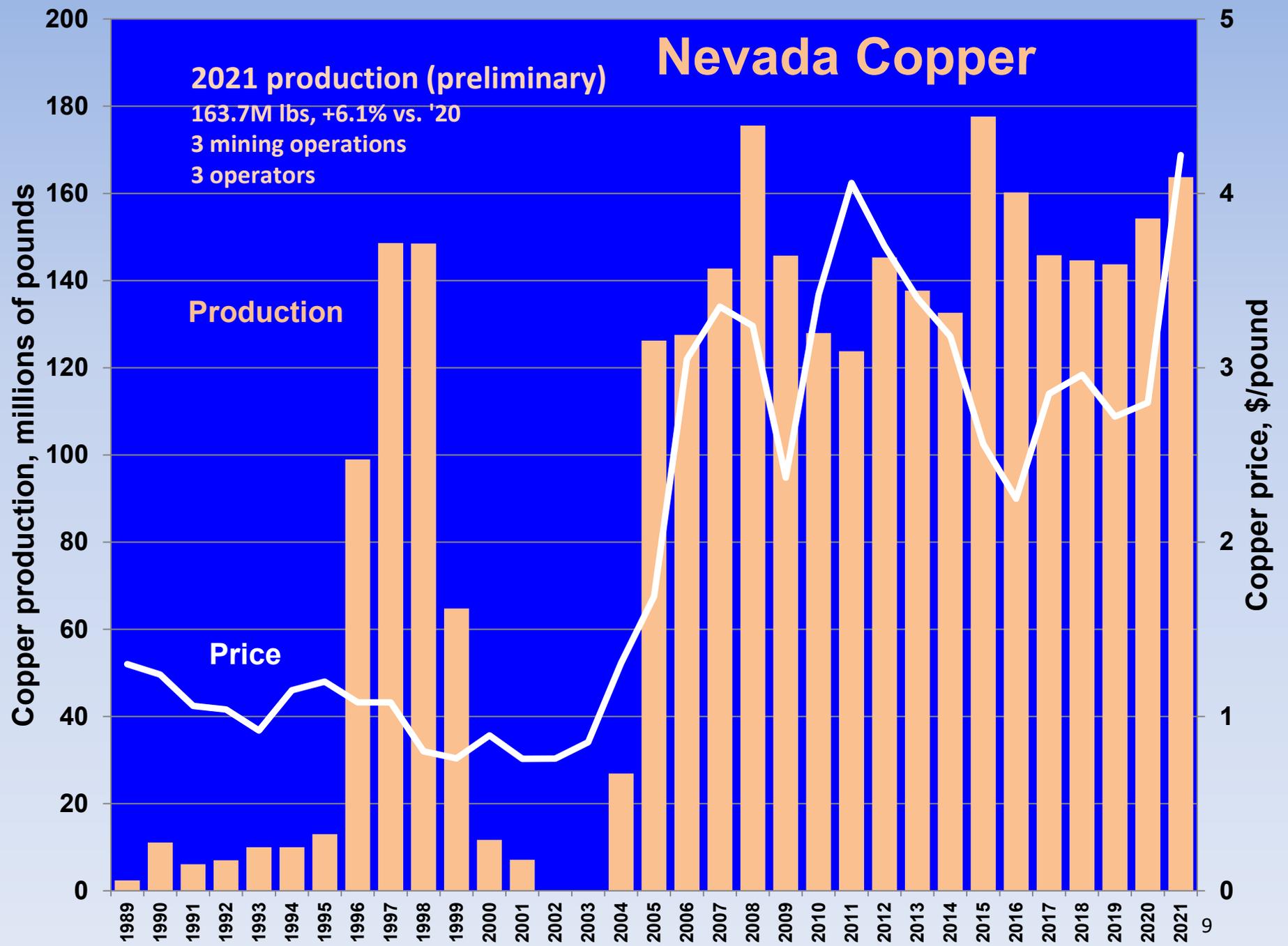
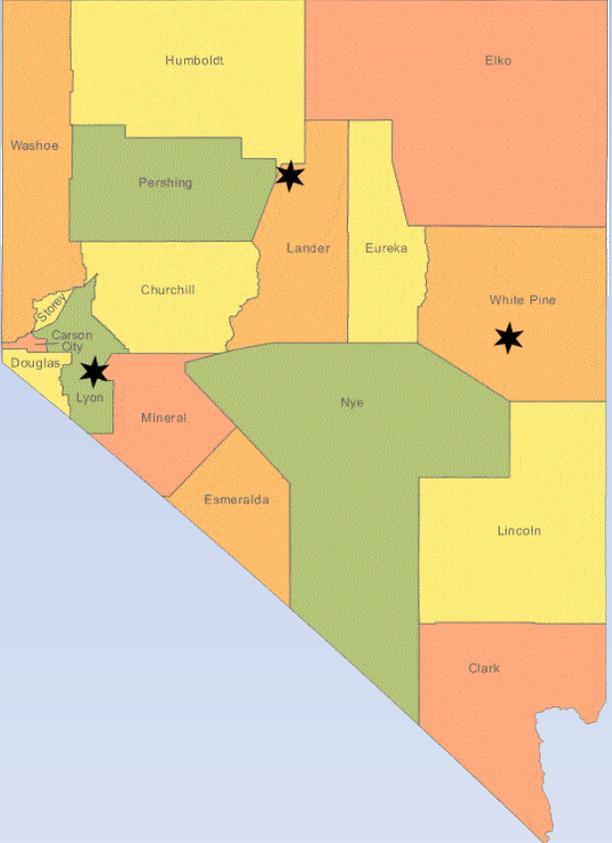
## 2021 Au % By Land Ownership

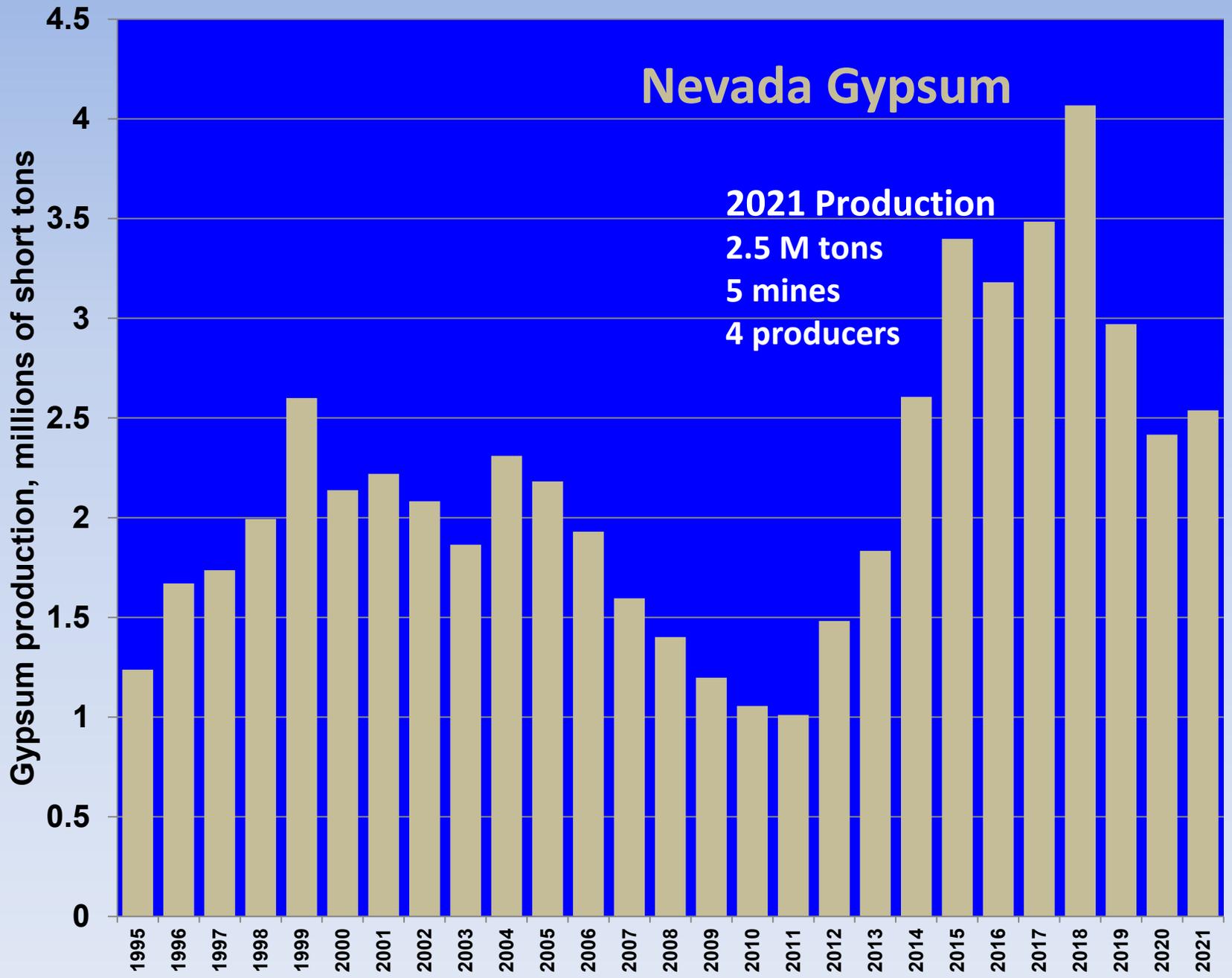


## % Au by Process (2020 vs. 2021)



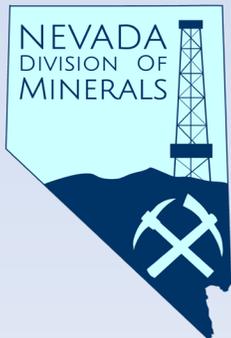






# Other Industrial Minerals Produced in 2021 (Preliminary)

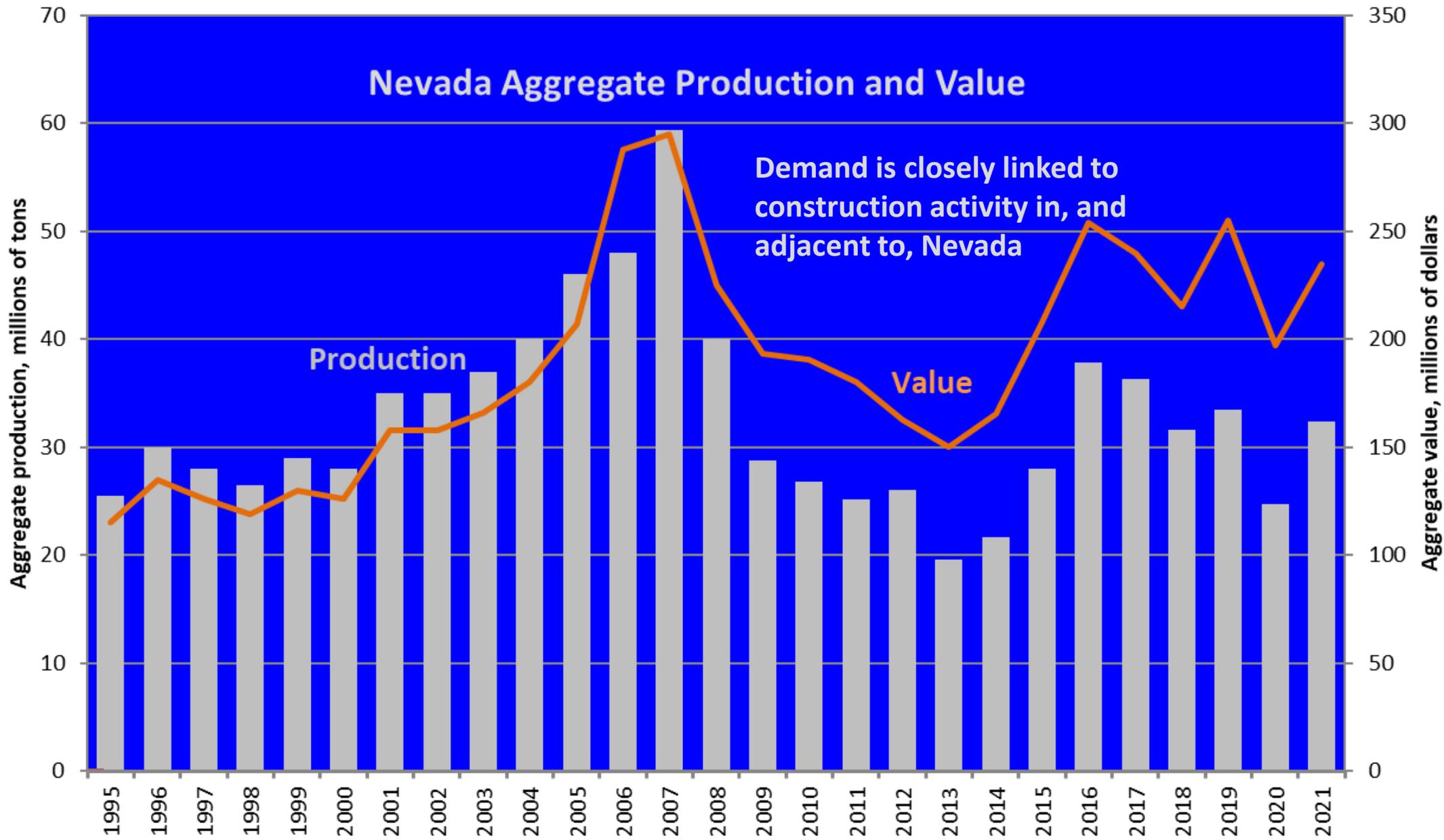
- 12,700,000 lbs of lithium compounds
- 658,000 tons of silica sand
- 129,000 tons of magnesium compounds
- 306,000 tons of diatomite
- 240,000 pounds of molybdenite
- 16,000 tons of salt
- 3,700 tons of perlite
- ~200,000 tons of specialty clays



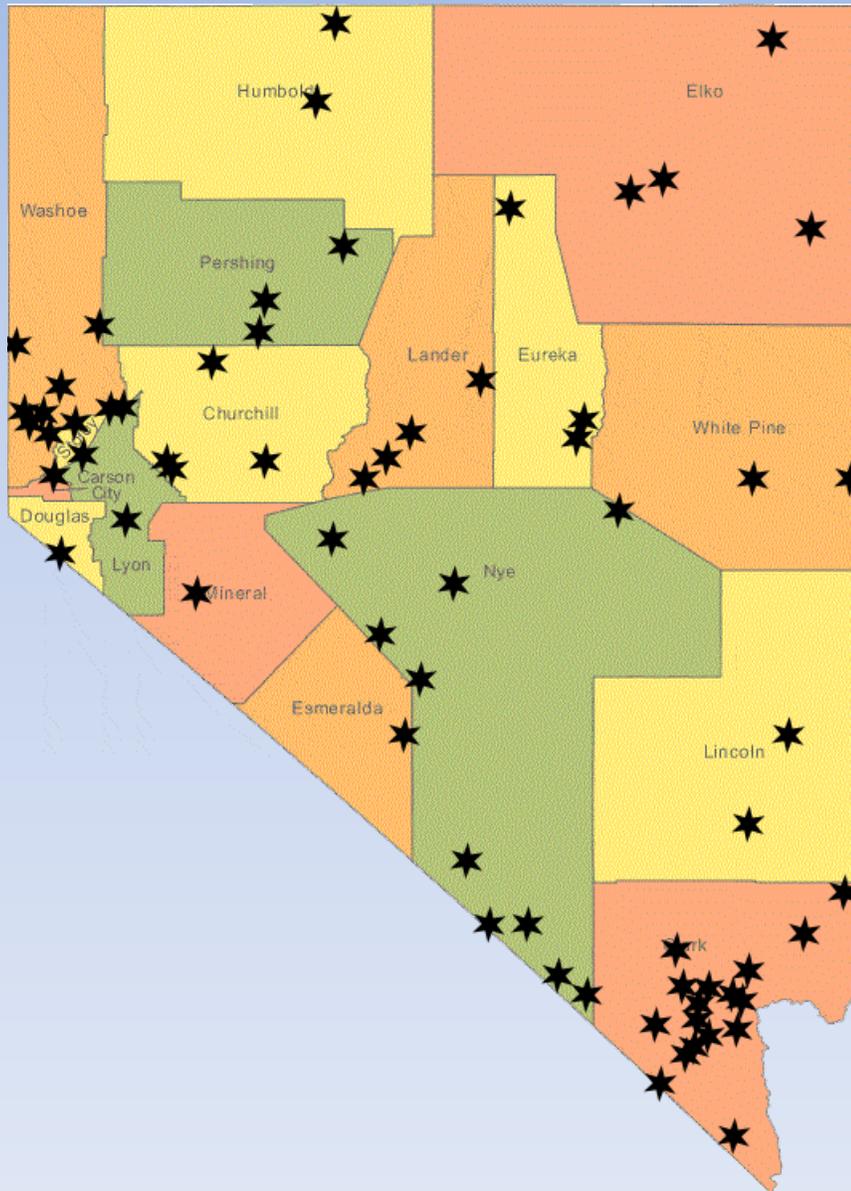
# Nevada Aggregate



# Nevada Aggregate Production and Value



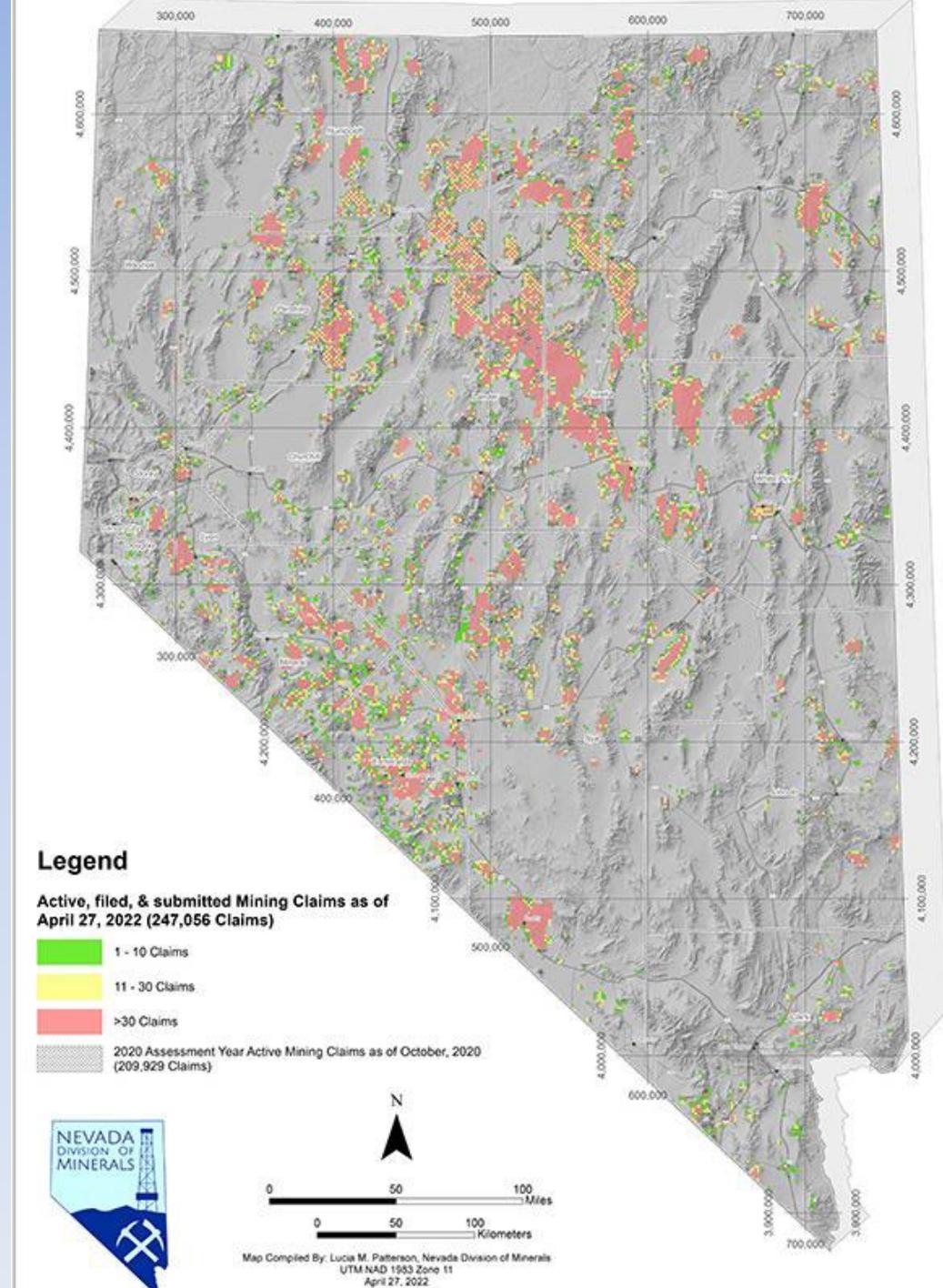
# Nevada Aggregates

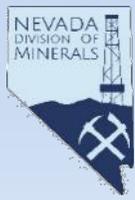


- 4<sup>th</sup> highest valued commodity in NV
- Includes:
  - Crushed rock
  - Sand and gravel
- Used primarily for construction but also for landscaping material and products
- 100s of former and current borrow pits
  - NDOT and county road maintenance
- BLM Mineral Materials sales of \$10M in FY20
- Unlike most commodities, cost is determined largely by distance needed to transport
- Creates NIMBY challenges in urban areas

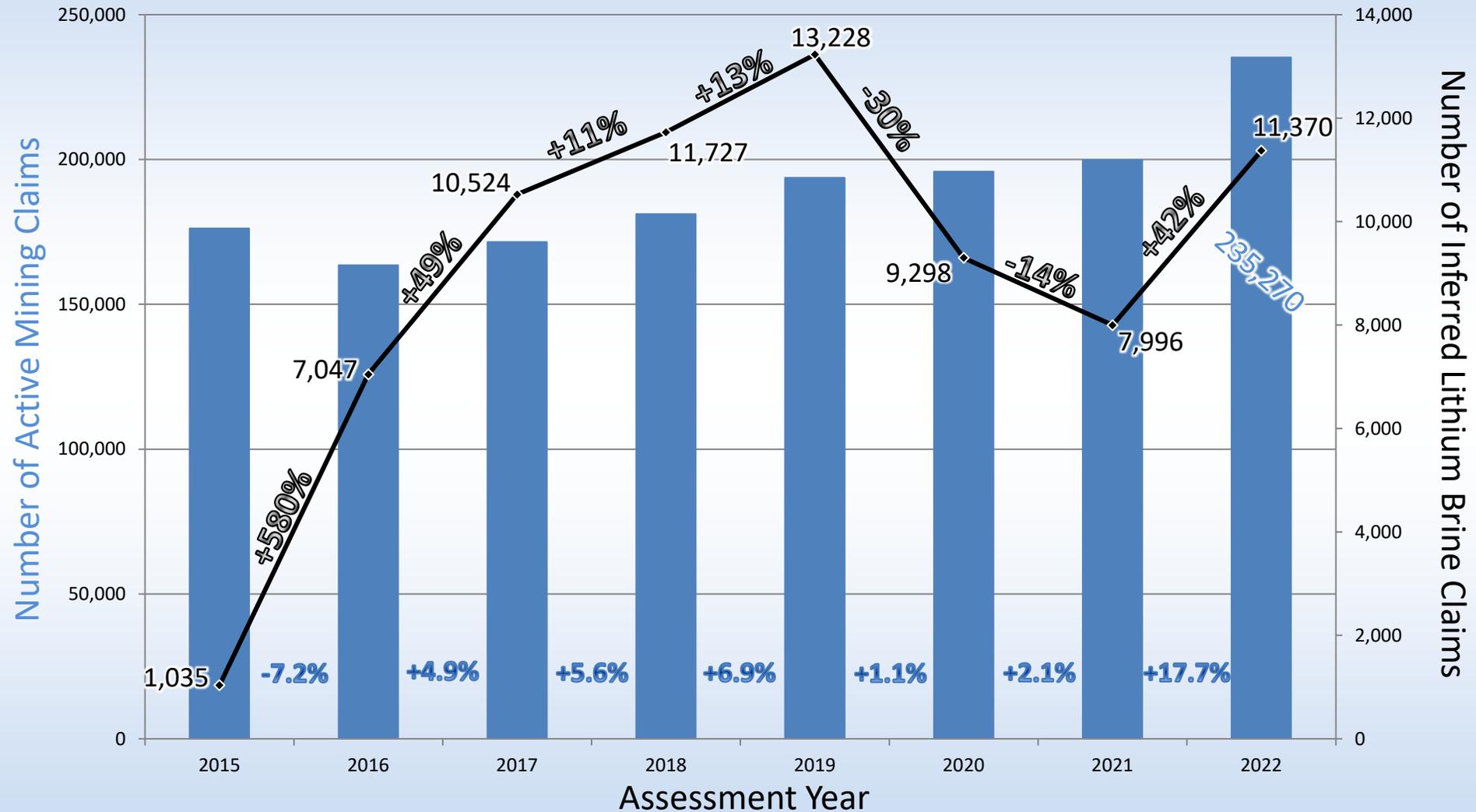
# NEVADA MINING CLAIMS

- 244,492 Active Mining Claims in Nevada as of 3/29/2022
- Increase of 11% from April 2021
- >50% of all US mining claims
- Annual maintenance payments of \$165/claim to BLM and \$12/claim to county recorder
  - ~\$39M to BLM (2021 AY)
  - ~\$2.8M to Nevada counties
- The trend in claims is an indicator for exploration interest and largely the price of gold
- >\$643M spent on exploration in NV in 2019 and 2020
- 71% increase in number of placer claims for lithium brine YOY





# Unpatented Mining Claims By Year



NDOM has been gathering active claim data from LR2000/MLRS at the end of October for the last eight years. The purpose of this graph is to show claims data and statistics from the same snapshot in time.

# The Demand for Lithium

Electric Vehicle sales in millions

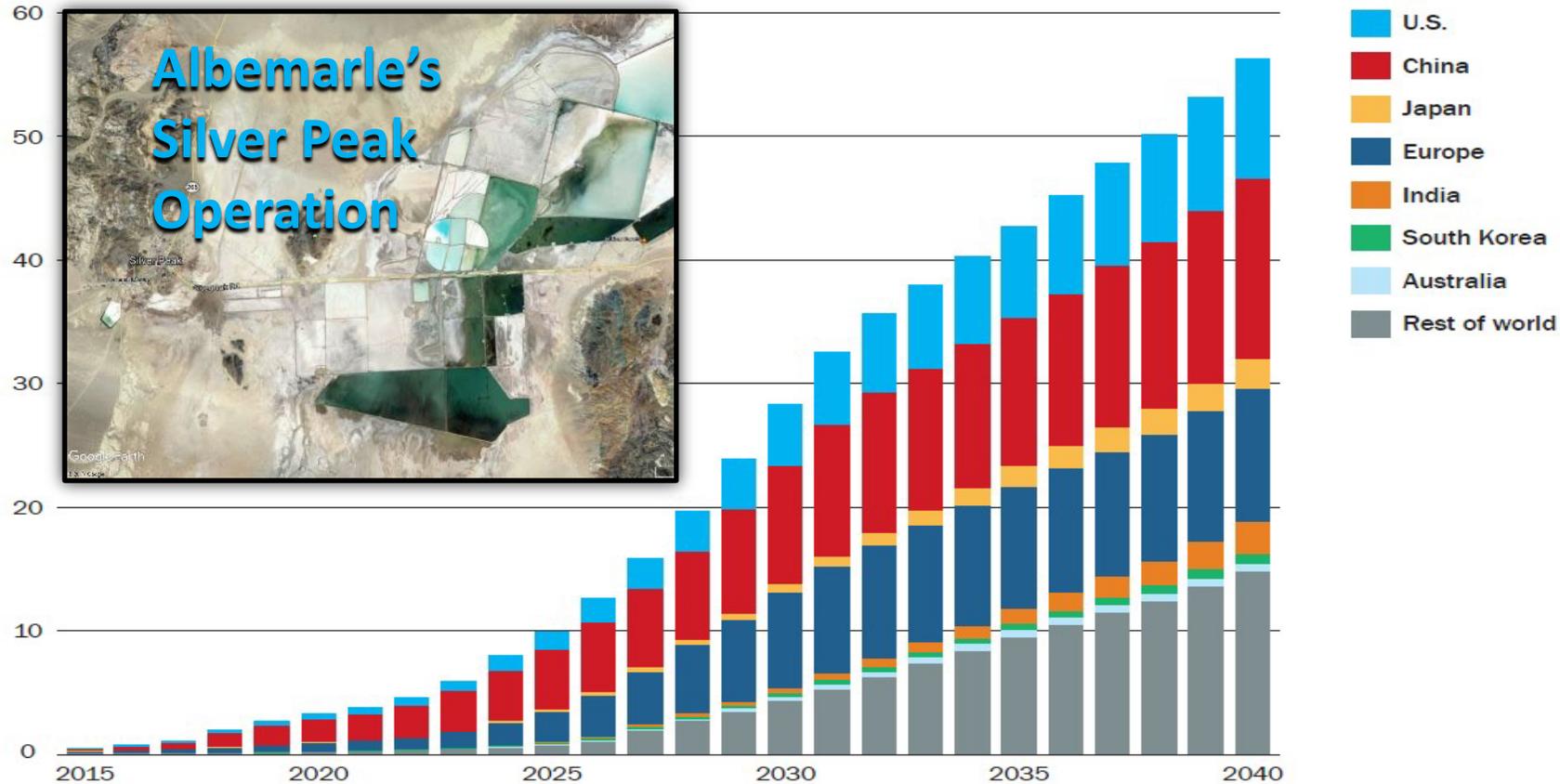


FIGURE 1. Annual Sales of Passenger EVs (Battery Electric Vehicles (BEVs) and Plug-in Hybrid Electric Vehicles (PHEVs)).  
Source: BloombergNEF Long-Term Electric Vehicle Outlook 2019.<sup>16</sup>

- The Tesla/Panasonic battery factory alone needs 5X the amount of lithium mined annually in Nevada.
- If one or more Li clay project begins mining, NV will produce >10% of world production, would then expect vertical integration with a cathode plant built in NV.
- Successful application of DLE technology will dramatically increase lithium brine mining.

# Critical Minerals

A “critical mineral,” as defined by the E.O. 13817, is a mineral:

1. identified to be a nonfuel mineral or mineral material essential to the economic and national security of the United States
2. from a supply chain that is vulnerable to disruption
3. that serves an essential function in the manufacturing of a product, the absence of which would have substantial consequences for the U.S. economy or national security.



<u>Aluminum</u>	<u>Fluorspar*</u>	<u>Manganese*</u>	<u>Tellurium</u>
<u>Antimony*</u>	Gadolinium	<u>Neodymium</u>	Terbium
<u>Arsenic*</u>	<u>Gallium</u>	<u>Nickel</u>	Thulium
<u>Barite*</u>	Germanium	Niobium	<u>Tin</u>
<u>Beryllium*</u>	<u>Graphite</u>	<u>Palladium</u>	<u>Titanium</u>
<u>Bismuth</u>	Hafnium	<u>Platinum</u>	<u>Tungsten*</u>
Cerium	Holmium	Praseodymium	<u>Vanadium</u>
Cesium	<u>Indium</u>	<u>Rhodium</u>	Ytterbium
<u>Chromium</u>	<u>Iridium</u>	Rubidium	<u>Yttrium</u>
<u>Cobalt</u>	<u>Lanthanum</u>	Ruthenium	<u>Zinc*</u>
Dysprosium	<u>Lithium*</u>	Samarium	<u>Zirconium</u>
Erbium	Lutetium	<u>Scandium</u>	
<u>Europium**</u>	<u>Magnesium*</u>	<u>Tantalum</u>	

- An updated list was published as final by USGS in Feb. 2022
- 33 of the 50 occur in Nevada

**Bold indicates known occurrences**

\* indicates past or present production in Nevada

# MINERALS ESSENTIAL TO ADVANCED ENERGY TECHNOLOGY



**INFRASTRUCTURE**  
Copper, Iron Ore,  
Molybdenum



**PUBLIC TRANSIT**  
Aluminum, Titanium,  
Magnesium



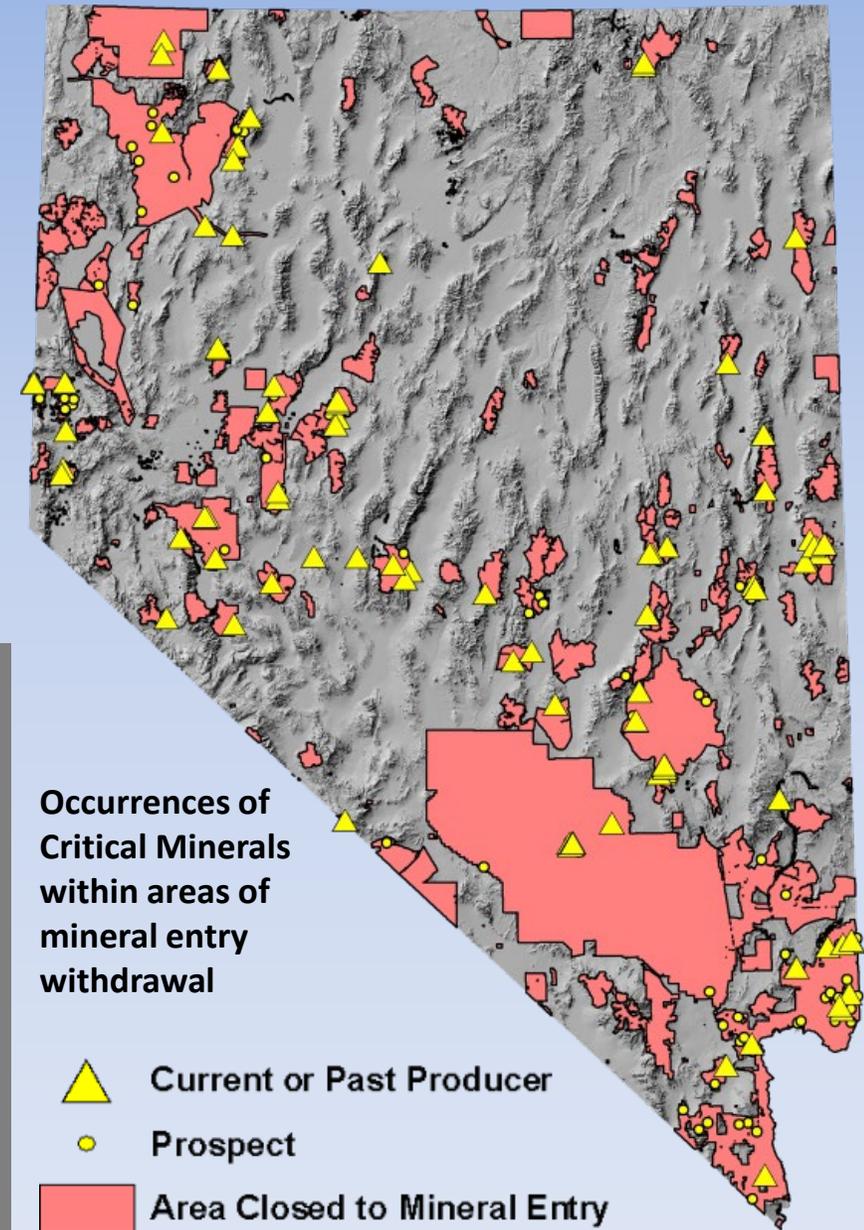
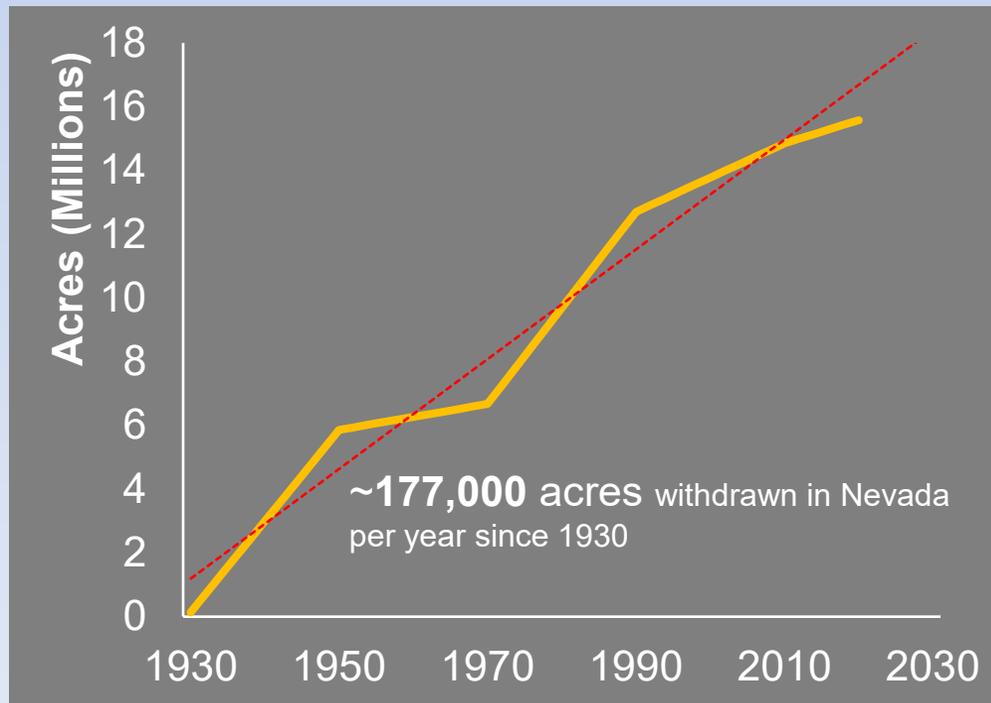
**AUTOMOBILES/  
ELECTRIC VEHICLES**  
Copper, Nickel, Lithium,  
Cobalt



**RENEWABLE ENERGY**  
Gold, Silver, Zinc

➤ Renewed exploration in NV for cobalt, copper, graphite, lithium, nickel, REE, tungsten, vanadium, and zinc while conservation efforts continue to remove land from development.

➤ Nevada is uniquely positioned to lead the US in transitioning away from fossil fuels *so long as* federal land is available for the environmentally responsible extraction of the commodities needed to electrify the nation.



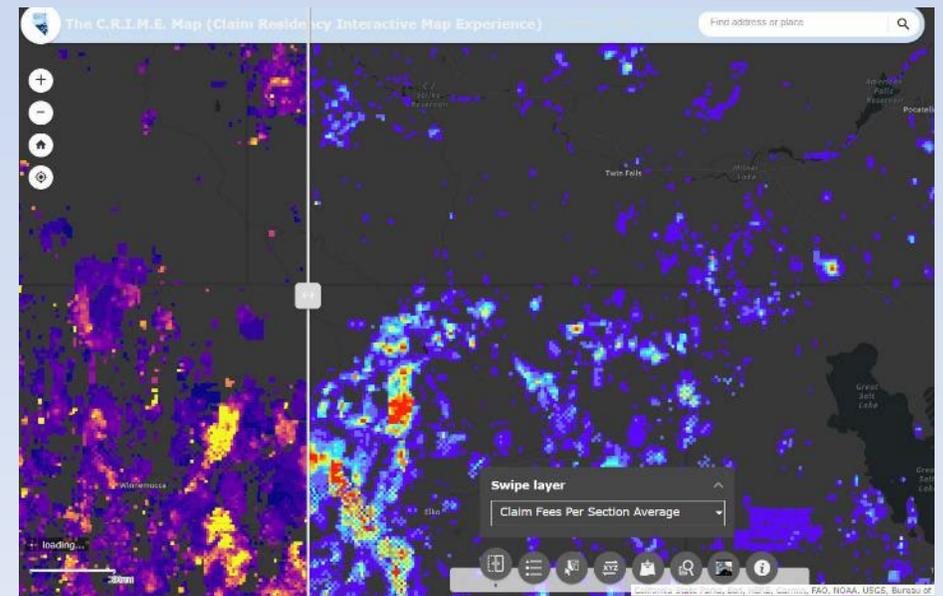
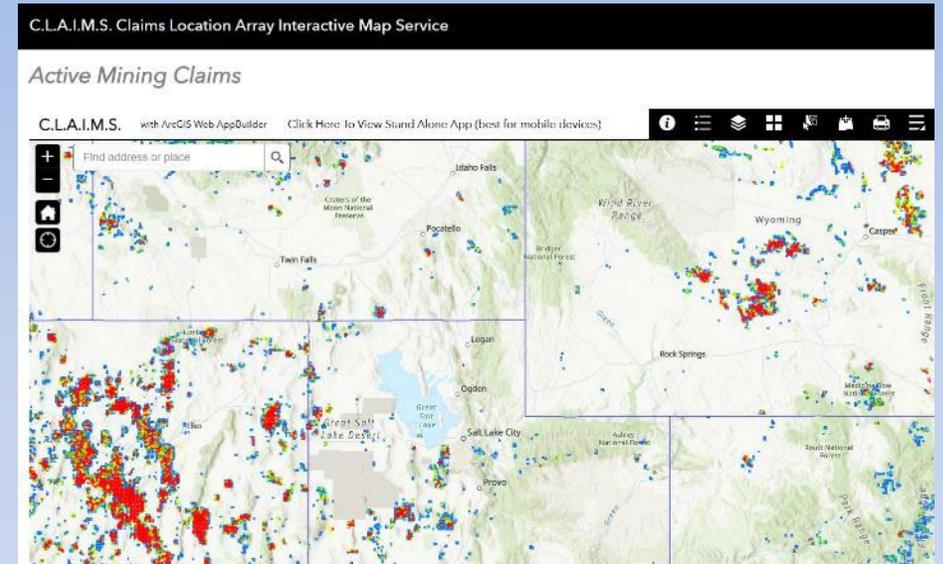
# New NDOM Open Data Services

## ➤ Claims Location Array Interactive Map Service (C.L.A.I.M.S.)

- A platform for exploring and downloading mining claims, BLM Plan and Notice GIS data
- Includes both historic and current data for: AZ, CA, CO, ID, MT, NV, NM, OR, UT, WA and WY
- <https://claims-nvdataminer.hub.arcgis.com/>

## ➤ Claim Residency Interactive Map Experience (C.R.I.M.E.)

- For viewing of mining claim density and annual federal fees paid through time per section
- View sum and average of fees per section
- Includes same 11 western states, notice and plan data, and USGS MRDS and USMIN datasets
- <https://data-ndom.opendata.arcgis.com/>



# Concluding Comments

- **Copper is #2 in gross value and increasing**
  - **Limitation is lack of downstream smelting and refining**
  - **Electric vehicles vs. gas require 5-8X more copper**
- **Industrial mineral production in NV likely to increase as it is easier to put into operation than in other western states**
- **Increase in # of projects being permitted largely due to increased gold price but also in relation to increased demand for commodities needed for renewable energy and batteries (Co, Li, Ni, V, Zn)**
- **Competition for workers will result in changes to workplace, schedules, benefits, and \$\$\$**
- **Permitting timelines increasing due to insufficient human resources necessary to handle increased volume; locatables, solar, geothermal, oil are all experiencing an upswing**
- **Escalation in investor and consumer interest on the value of environmental, social and corporate governance (ESG) regarding sourcing and mining of commodities**

# For More Info:

- Agency Homepage: [minerals.nv.gov](http://minerals.nv.gov)
- “Mining” program page
  - Production summaries and stats
  - Numerous free publications and maps
- “Current Information”
  - Links to 17 Distance Learning Educational Videos
  - Recent Presentations
- “Important Links - Open Data Site”
  - Interactive web mapping application to display and download information related to the minerals industry.
  - Location of mining claims, current and historical exploration activity and mineral production.
  - Public lands issues
  - New “C.R.I.M.E.” page

The screenshot shows the official website of the Nevada Division of Minerals. At the top, there is a navigation bar with links for HOME, ABOUT US, COMMISSION, PROGRAMS, NEWS, FAQs, and CONTACT US. The main content area features a large photograph of a desert landscape with a mining site. To the right of the photo is a 'Current Information' sidebar with several news items, including a video release, a BLM replacement announcement, and award presentations. Below the photo, there is a section for 'Emergency Measures Relating to COVID-19' with a detailed notice about office closures and remote work. Further down, there are sections for 'Employment Announcement(s)', 'Education Workshop(s)', 'Request for Information and Public Records', 'Important Links, Nevada Division of Minerals', and 'Other Important Links'. At the bottom, a 'Programs' section displays icons for various mineral-related activities: Dissolved Minerals Exploration, Education & Outreach, Geothermal, Mining, Oil and Gas, and Abandoned Mine Lands.

# Digital Exploration Resources – Nevada and Beyond

## Come to our Short Course!

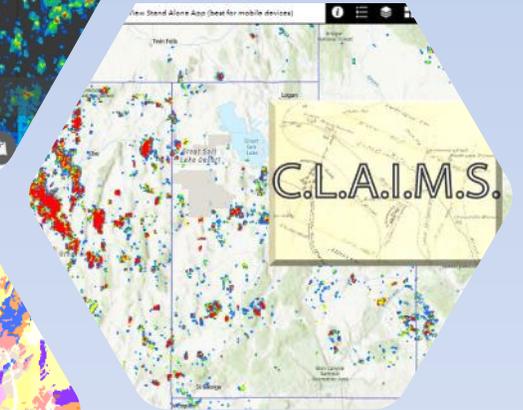
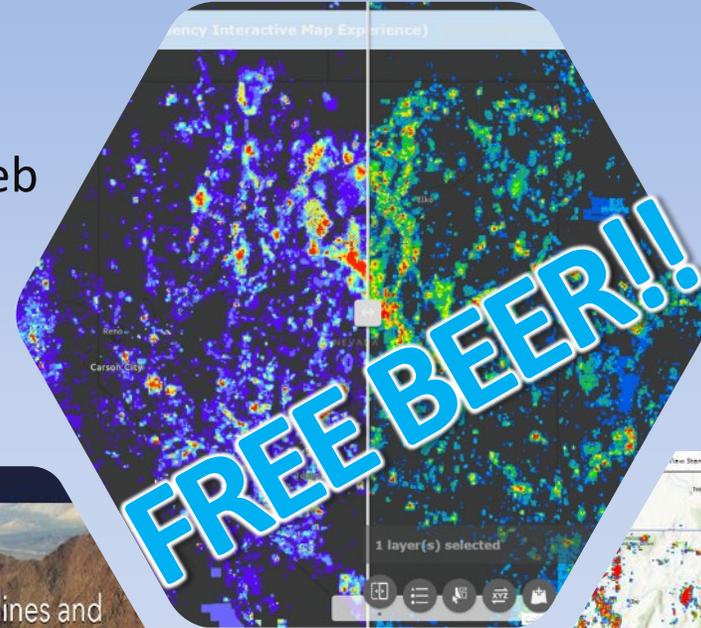
If you want to learn more about data, web maps and web applications available for explorationists in Nevada and beyond, please come to our short course!

**IT'S FREE!! LIVE DEMOS, OPEN DISCUSSION...  
YOU DESIGN THE CLASS...NOT US!**

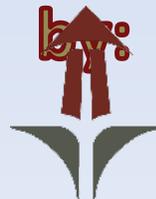
### Topics to be Explored:

- NDOM/NBMG Open Data Sites
- How to use the web applications
- How to filter/query the data
- How to download the data
- **C.L.A.I.M.S.** hub site (Claims, notices & plans for the western US)
- The new **C.R.I.M.E.** (Claims Residency Interactive Map Experience) application

Thursday :  
2-4pm  
Nugget 1



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DRILLING**

