

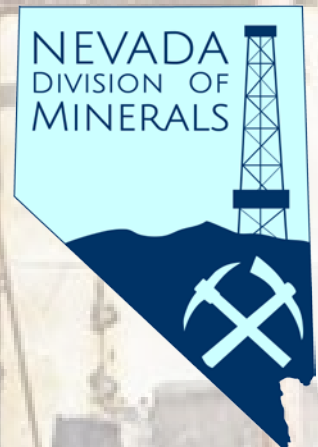
Nevada Division of Minerals

Current Status of Mining and Minerals in Nevada

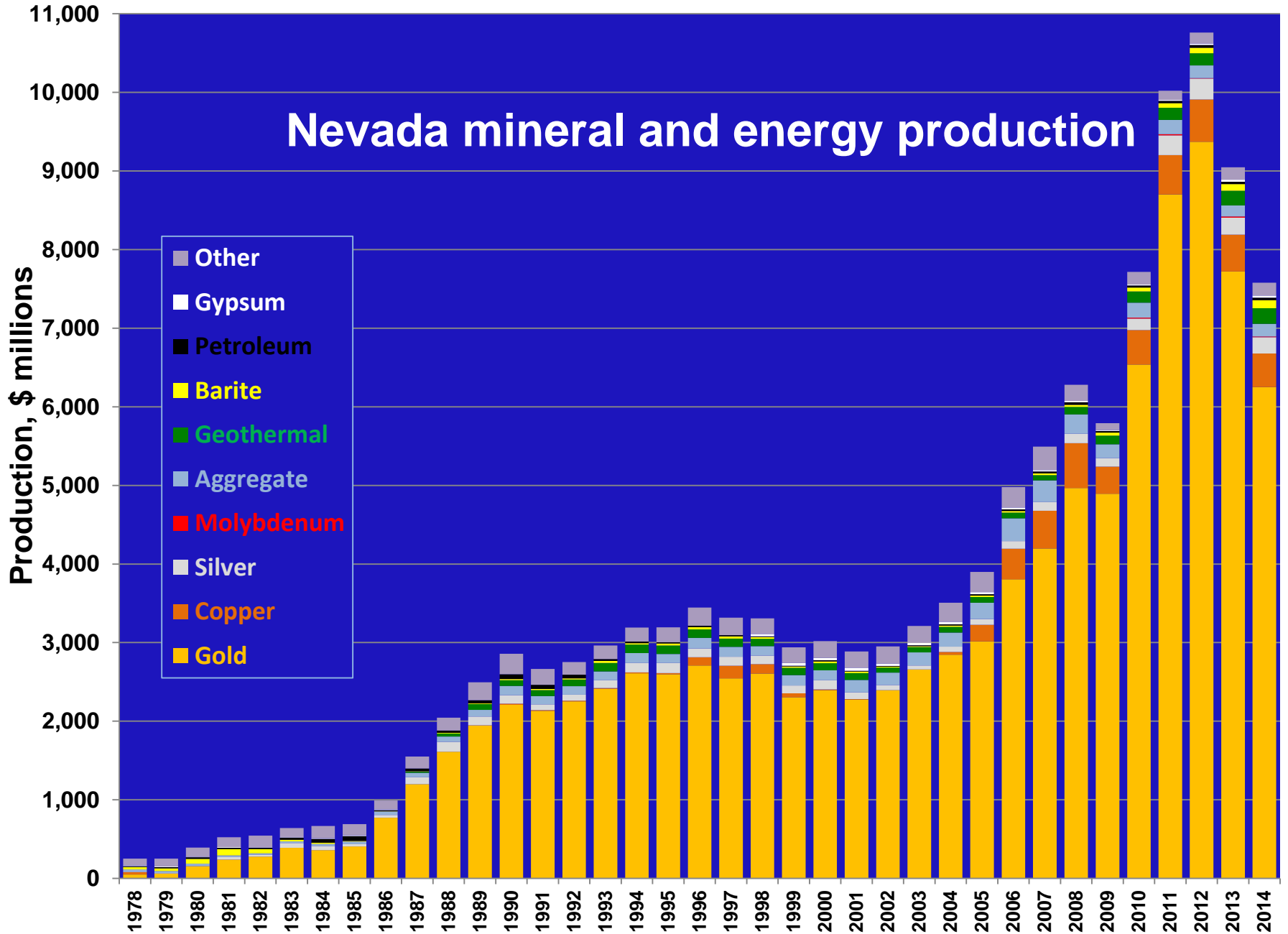
**MINING HISTORY
ASSOCIATION CONFERENCE,
VIRGINIA CITY, NV**

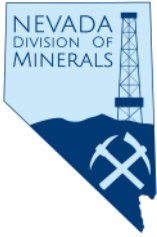
JUNE 12, 2015

Richard Perry, Administrator



Nevada mineral and energy production





2014 Metal Production

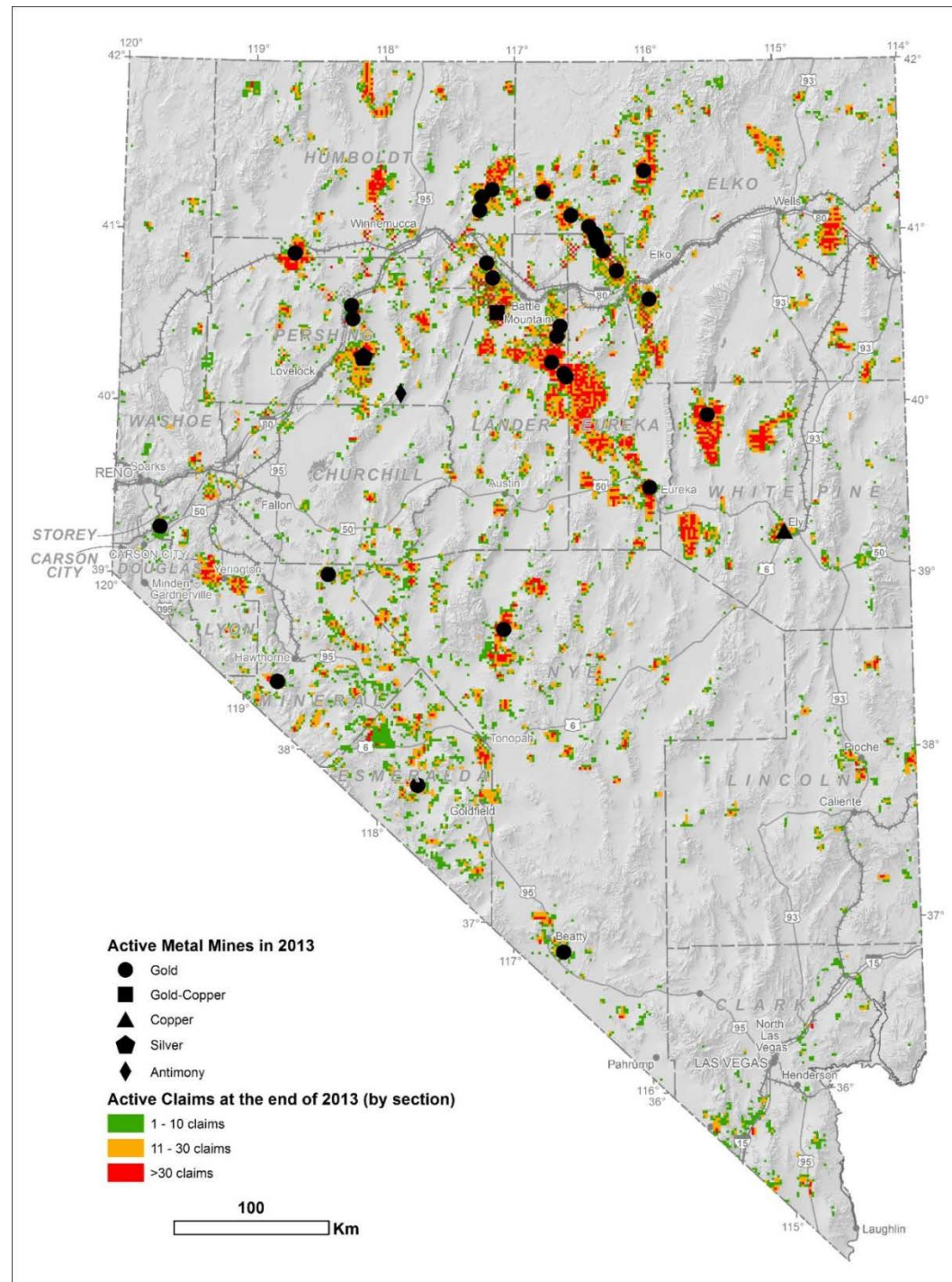
4,935,997 ozs gold

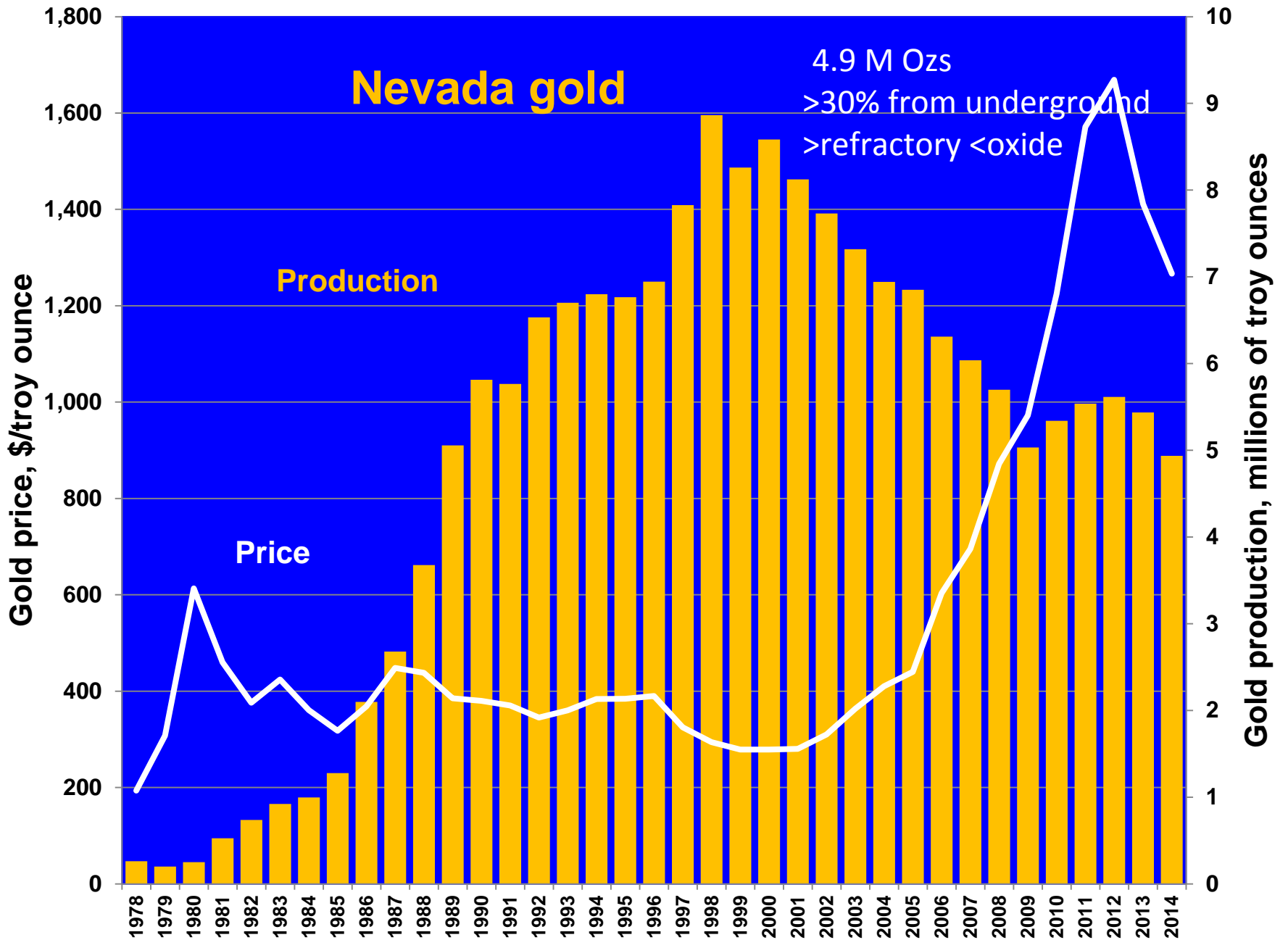
10,993,704 ozs silver

132,616,318 lbs copper

Major metal miners in Nevada, 2014:

- Barrick – Au, Ag
- Newmont- Au, Ag, Cu
- Round Mountain – Au, Ag
- Allied Nevada – Au, Ag
- Silver Standard – Au, Ag
- Veris – Au, Ag
- Coeur – Ag, Au
- KGHM – Cu, Au, Ag
- Klondex – Au, Ag
- Jipangu – Au, Ag
- Rawhide – Au, Ag
- Comstock – Au, Ag
- Borealis – Au, Ag
- 2014:
 - 30 gold producers
 - 26 silver producers
 - 2 copper producers





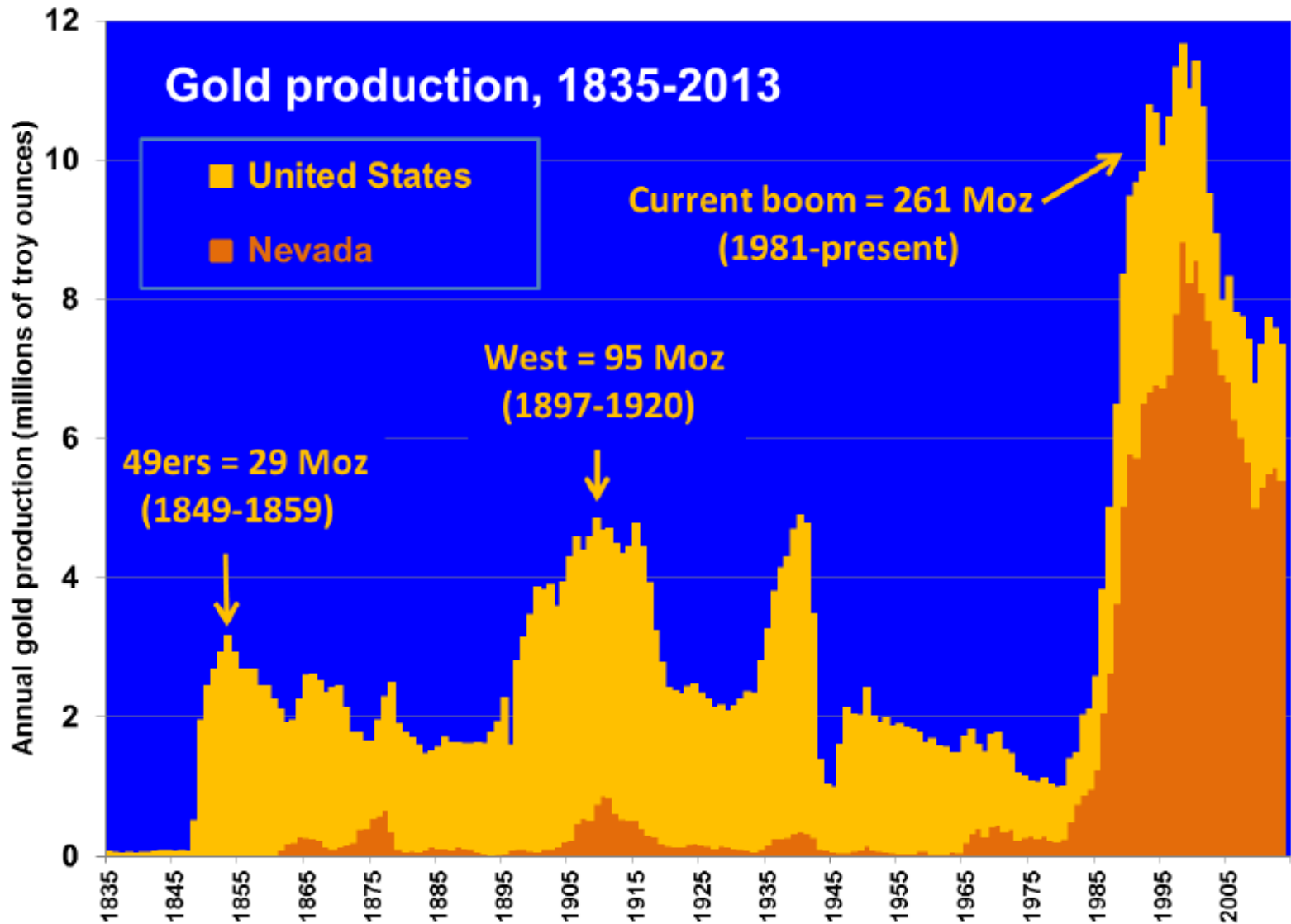
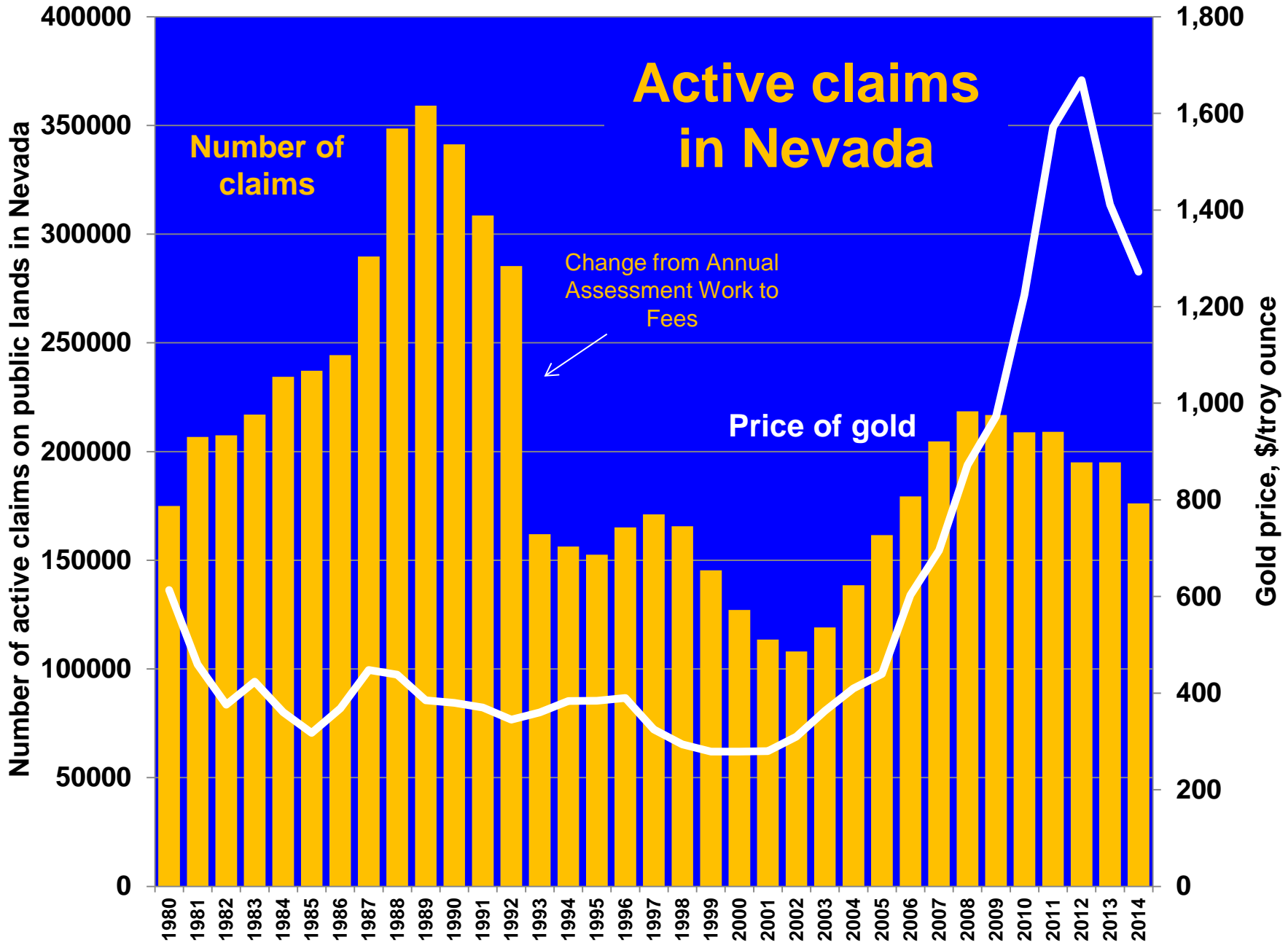


Figure 2. Chart comparing U.S. and Nevada gold production from 1835 to 2013.

Source: NBMG Special Publication MI-2013

Active claims in Nevada





Mining Methods in Nevada

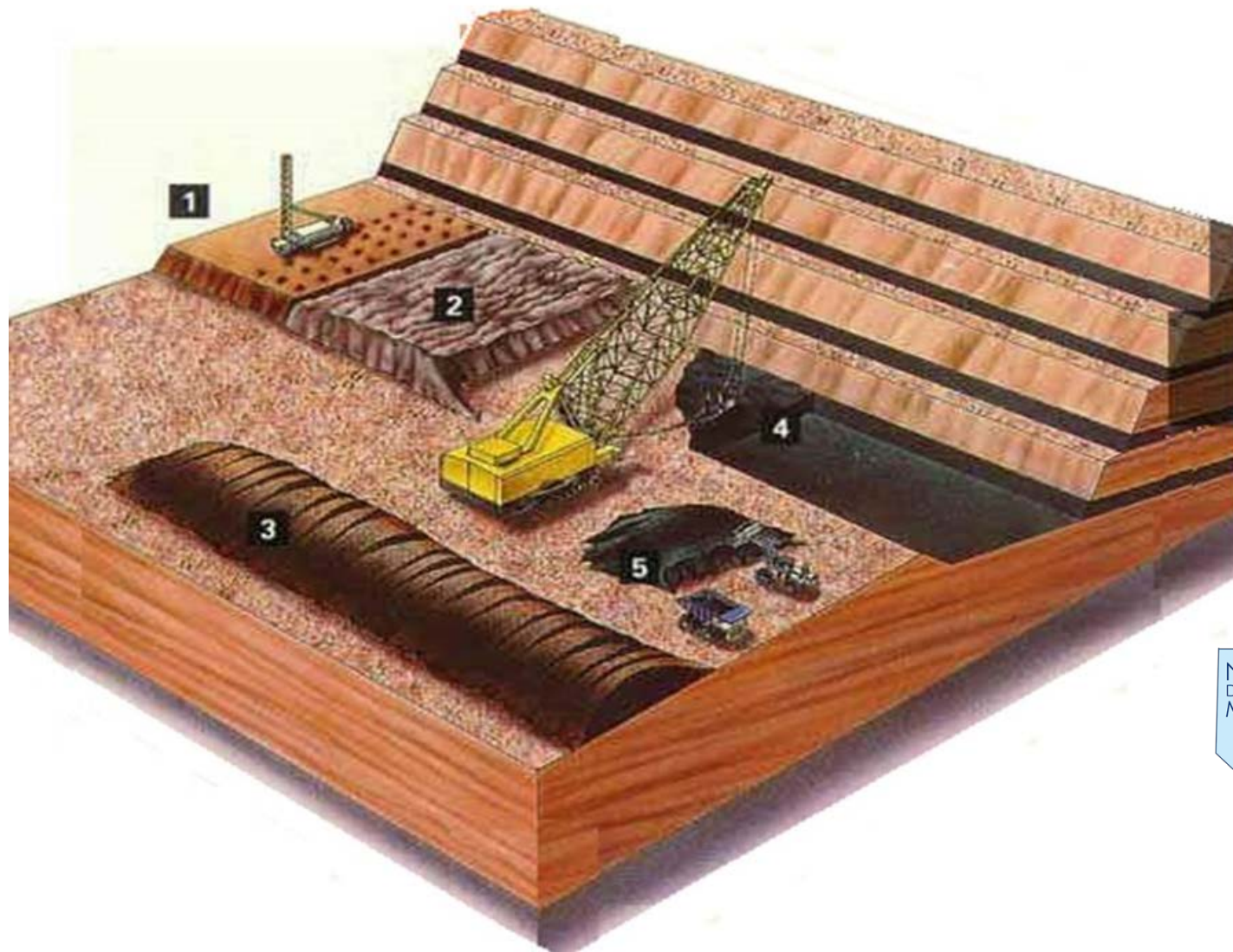
- Open Pit



- Underground



Basic Surface Mining





Open Pit Mining

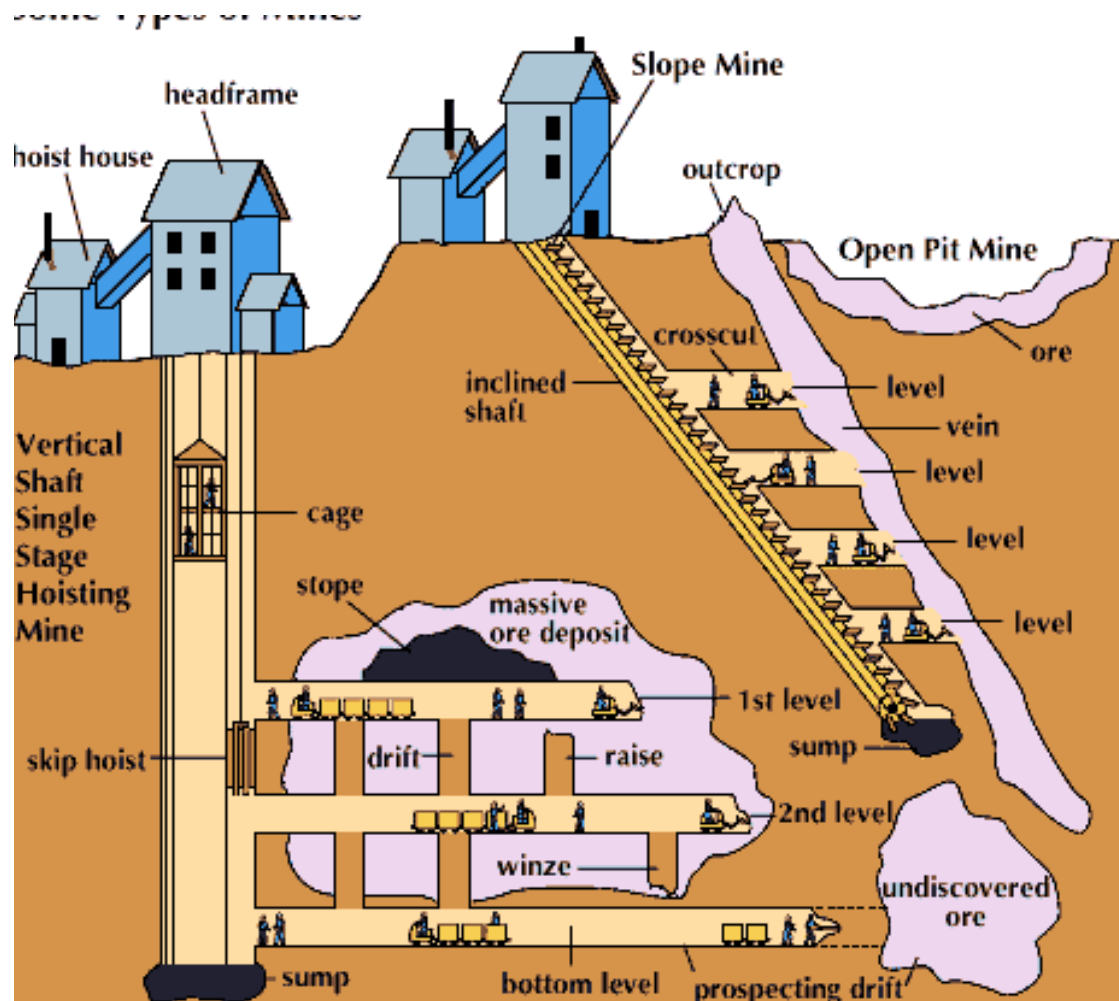




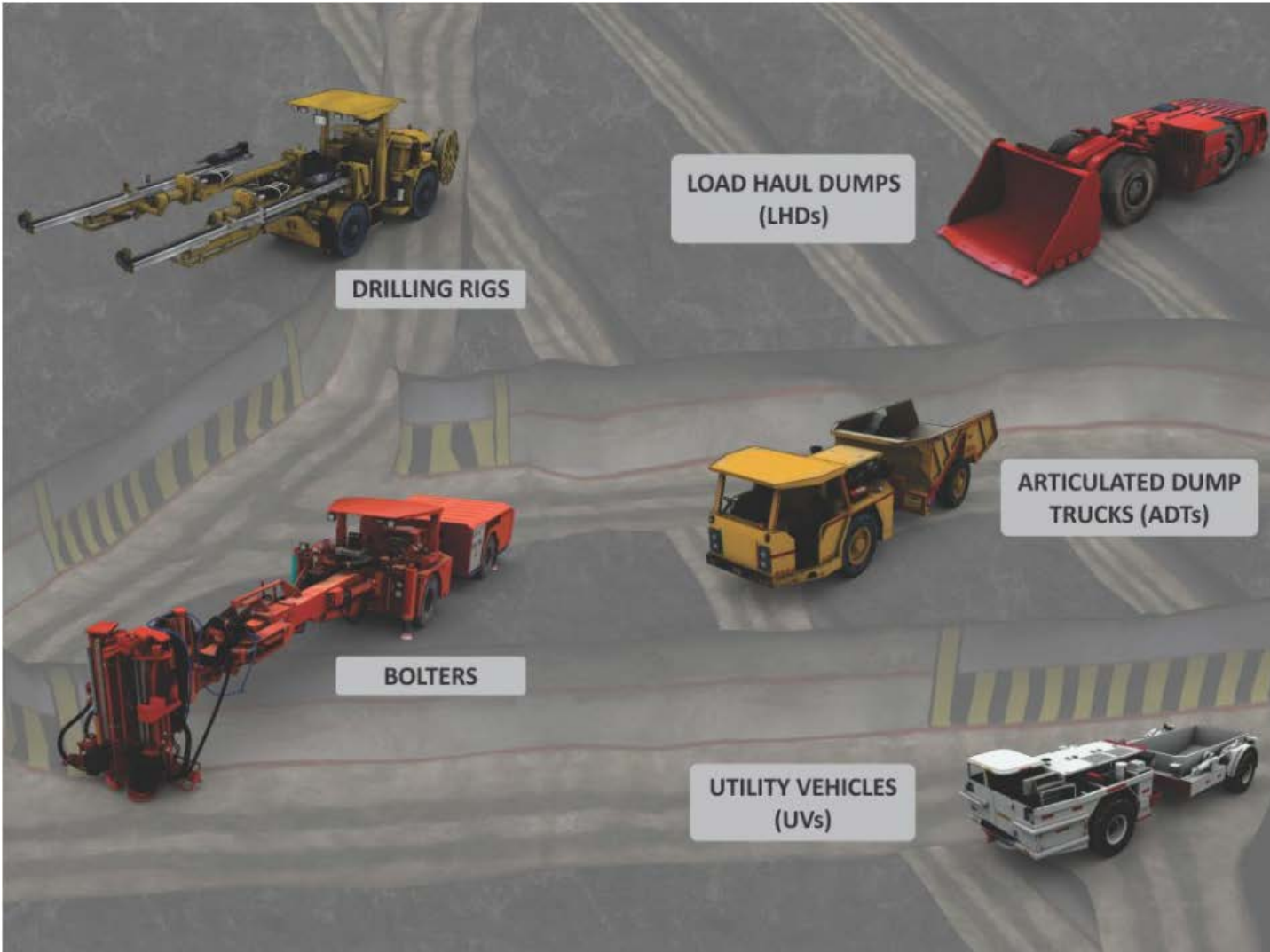
Open Pit Shovel with 400 Ton Haul Truck



Underground Mine Techniques



Common Underground Equipment



The Underground Mine Cycle

Drill



Blast



Muck



Ground Support



Drilling

- Face Drilling



- Long Hole Production Drilling



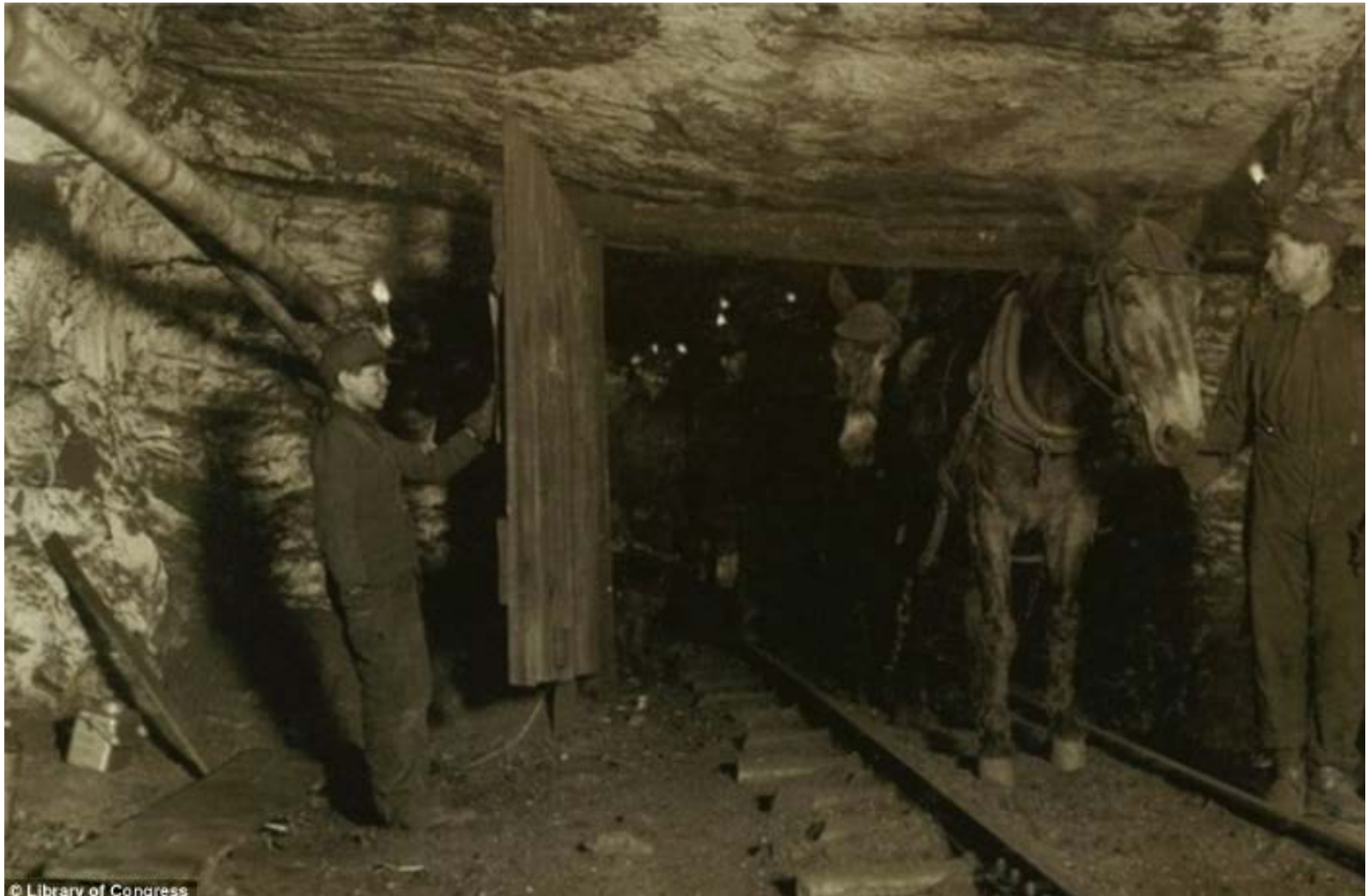
Blasting



Ground Support



Then





Now



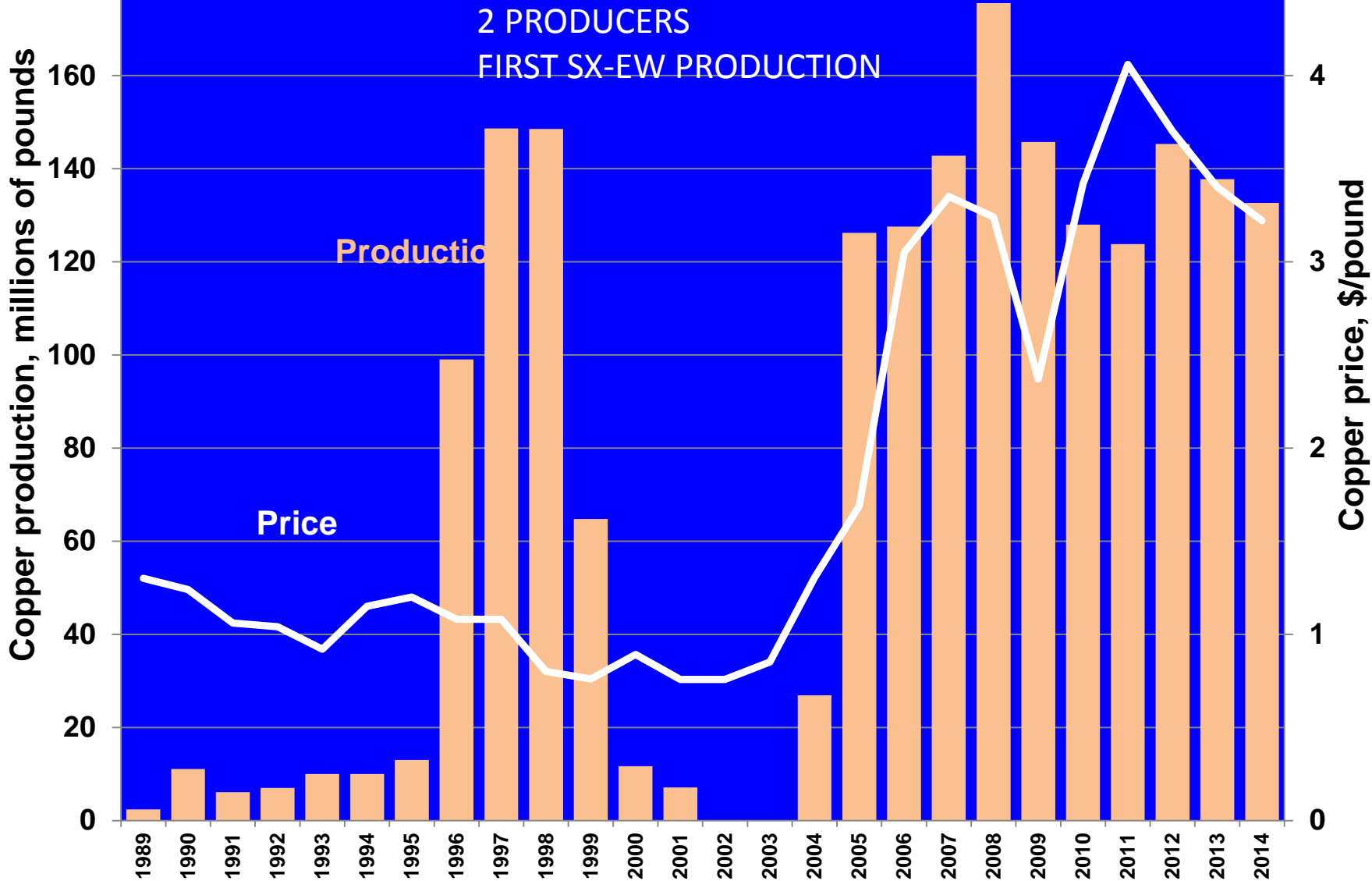


BASE METALS

Def: more common chemically active metals that are not precious metals.

- ***Pumpkin Hollow Project - Nevada Copper-Yerington***
- ***Robinson Mine - KGHM International - Ely***
- ***Mt. Hope deposit - General Moly – Eureka***
- ***Phoenix Mine - Newmont produces copper as a by-product of gold mining at the Phoenix Mine in Lander County***

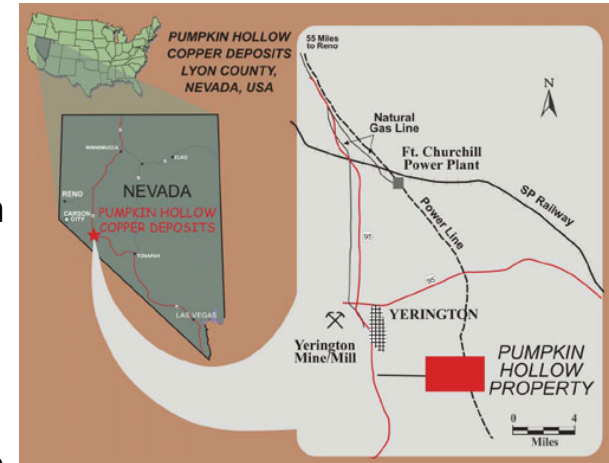
Nevada copper



Nevada Copper: Pumpkin Hollow

Located 8 miles southeast of Yerington, Nevada
Hybrid IOCG Chalcopyrite-Magnetite Skarn

- Located within the Yerington Copper Porphyry district
- Blind deposits originally discovered in 1959 by US steel Corp via airborne magnetics
- Currently the shaft at Pumpkin Hollow is at 1900'
- Excavating lateral developments before resuming sinking to 2161 feet (shaft bottom)
- The 1900' level will have two underground drill stations with an underground core rig beginning in May
- Plan is to produce 6,500 tons/day to feed an on-site concentrator
- Initial production to begin in 2016
- The mine should employ ~200 people



Site Location

Geologic Overview



Total District Production

1906 - 2014

>5 B lbs. Cu (avg. 1% Cu)

>3.5 M oz. Au

Remaining Reserves

2014 – 2020

112 Mt @ 0.43% Cu

0.006 opt Au

by-product Mo

Ruth Pit 2015



Robinson Nevada Mining Co.

NEW: General Moly: Mt. Hope

Located 22 miles northwest of Eureka, Nevada
Molybdenum Porphyry Deposit

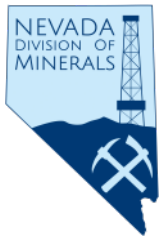


History and Facts:

- **Molybdenum is an alloy used in steel-making.**
- **Discovered in 1978**
- **World-class Molybdenum Porphyry Deposit**
- **Will be mined using open-pit methods**
- **40+ year mine; 400+ new jobs**
- **Partners are AMER International and POSCO, both steel companies who will purchase moly oxide product**
- **Permitted**



Mineral Reserves			
Classification	Cutoff Sulfide Mo	Tons X 1000	Sulfide Mo %
Proven	0.034%	320,473	0.084
Probable	<u>0.034%</u>	<u>664,129</u>	<u>0.063</u>
Proven + Probable	0.034%	984,602	0.070



INDUSTRIAL MINERALS

Def: Rocks and mineral not produced as sources of the metals, but excluding mineral fuels

- **NEVADA MINES PRODUCE THE FOLLOWING INDUSTRIALS:**
 - **Aggregates, for construction and landscaping**
 - **Barite, for oil and gas drilling mud**
 - **Diatomite, for filtering and adsorbents**
 - **Dolomite, for cement and livestock supplements**
 - **Gypsum, for wallboard and agricultural soil supplements**
 - **Limestone, for cement and lime**
 - **Lithium compounds**
 - **Magnesite, for light-weight cement and animal supplements**
 - **Perlite**
 - **Salt**
 - **Specialty clays, for drilling muds and liners**
 - **Zeolites, for water treatment and waste clean-up**

Rockwood Lithium: Silver Peak

Located in Silver Peak, NV
Lithium Brine Deposit

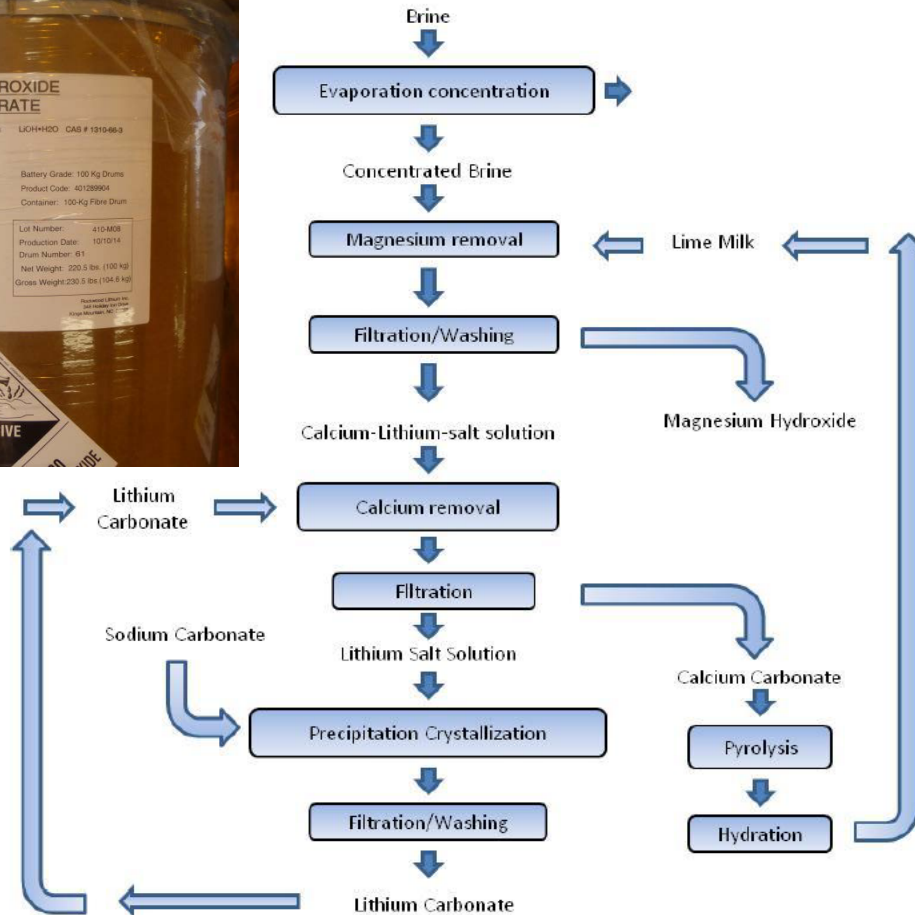


General Overview:

- Only US Primary Lithium mine
- First lithium carbonate was produced in 1967
- Brine is pumped from 4 aquifers
- 1st ore body ran 300ppm Li in 200-300' aquifers (Main Ash Aquifer)
- By-product is NaCl
- Employs 75 directly + 10 contractors



Rockwood Lithium Carbonate Production (2 Year Process from brine to Li Concentrate):

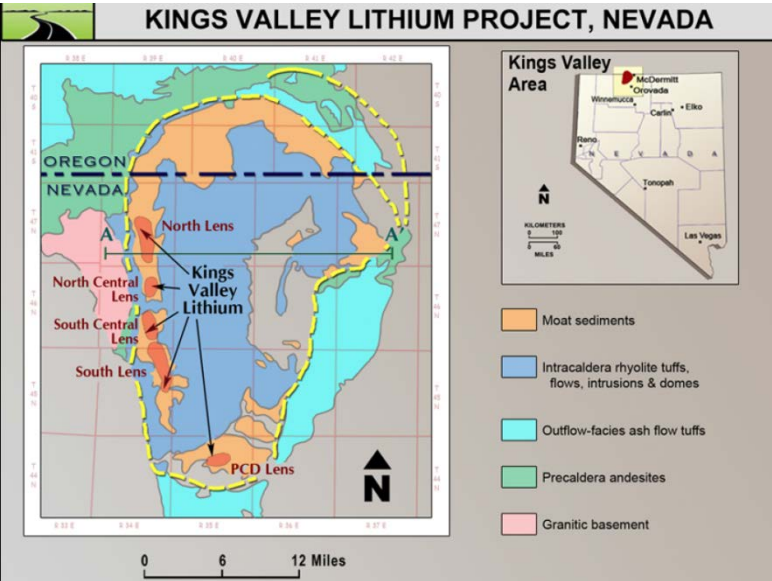


Primary product is Li-Carbonate

Western Lithium: Kings Valley

100 km north-northwest of Winnemucca, NV and 40 km west-northwest of Orovada, NV

Lithium/Organoclay Drilling Additive Supplier



- in the moat deposits of the McDermitt Caldera
- It is a near surface clay exposure that is right next to a major highway
- Hectorite is an effective additive to drilling muds and has emerged as the enabling mineral with thermal stability superior to bentonite clays to perform in challenging environments i.e. High Pressure & High Temperature
- This allows for the US to target deeper oil and natural gas sources in turn decreasing foreign oil imports and increasing our natural gas supply
- Environmental approvals have been received for the extraction of the clay

High Purity Hectorite Clay

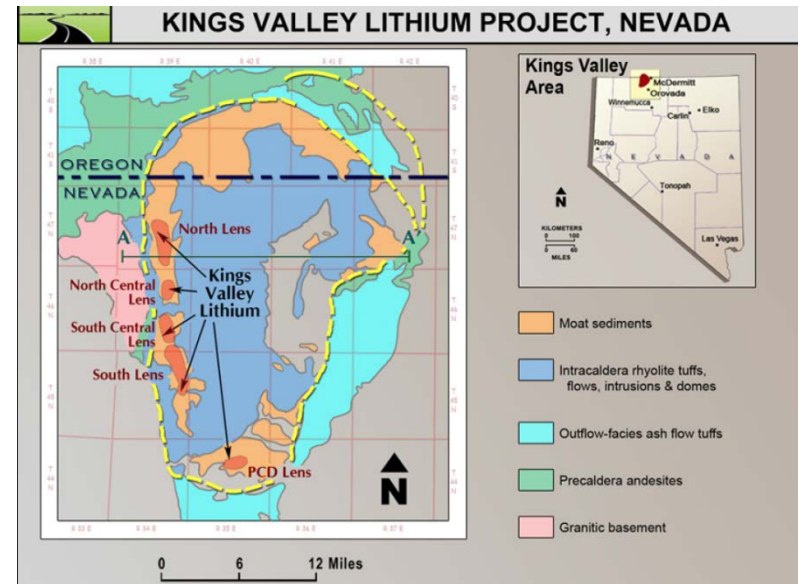


Western Lithium: Kings Valley

100 km north-northwest of Winnemucca, NV and 40 km west-northwest of Orovada, NV

Lithium/Organoclay Drilling Additive Supplier

- Lithium-bearing clay deposit (hectorite)
- Plant started up in December 2014
- Plant is located off I-80 Fernley, NV
- Shipping high-pressure, high temperature drilling mud product.
- The Hectatone plant created 20 new jobs in Nevada!



High Purity Hectorite Clay





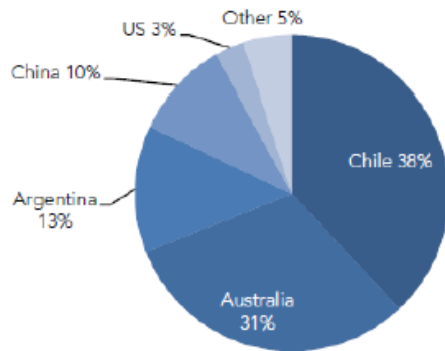
Exhibit 1: Lithium Applications 2011



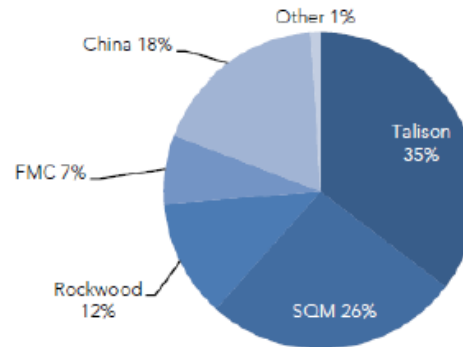
Source: signumBOX

Exhibit 6: Lithium Reserves & Supply

Lithium Supply by Country 2011



Lithium Supply by Company 2012



Sources: signumBOX

The report is available on-line at:
www.globalstrategicmetalsnl.com/_content/documents/405.pdf

APEX LIME - LHOIST NORTH AMERICA, CLARK COUNTY

20 Miles NE of Las Vegas



2 ORES MINED:

- High-Calcium lime from the Crystal Pass member of the Devonian Sultan Limestone
- Dolomitic lime from the Bullion dolomite member of the Mississippian Monte Cristo Limestone



LHOIST PRODUCES 3 PRODUCTS AT APEX:

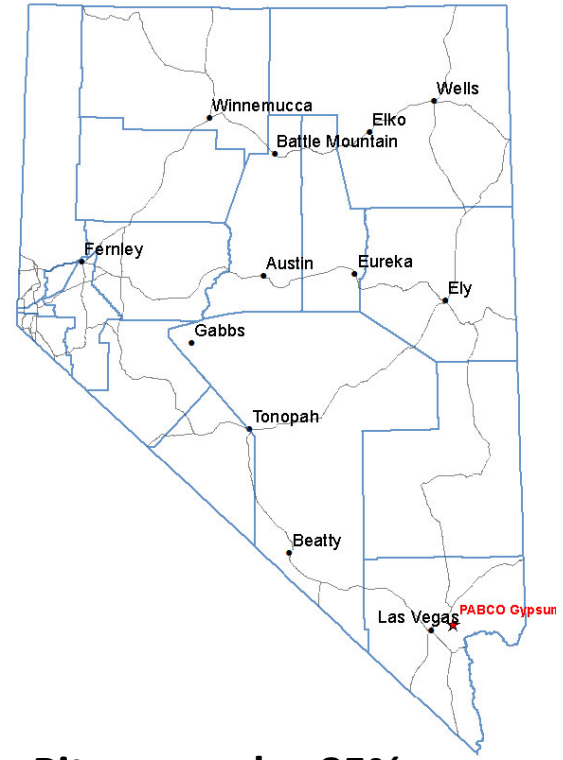
- High purity lime (95-97% CaO) used in environmental & metallurgical applications
- Type-S hydrated dolomitic lime used in construction
- Crushed limestone used in gas scrubbing

- 100+ year ore reserve
- Expanded to four operating calcining kilns
- Rail and truck delivery from plant



PABCO GYPSUM LAS VEGAS QUARRY AND WALLBOARD PLANT

- **Gypsum deposit in a Miocene-age gypsite blanket in the Horse Springs FM.**
- **120 feet thick, near-flat, very little stripping required**



- **Pit run grades 85% gypsum**
- **500-year reserve**
- **Low-cost mining: wheel loader and in-pit conveyor**
- **2013 production > 1 M. tons**



PABCO GYPSUM

- Crushing and washing plant
Removes clay to produce
94% gypsum product

- Wallboard plant is one of
the largest and most advanced
In the world

- Wallboard is sold in CA, NV,
UT, AZ, Canada
- Recently contracted with
Home Depot as supplier



St. Cloud Mining: Ash Meadows

Located in Inyo County, Ca & Nye County Nevada 70 miles northwest of Las Vegas

Zeolite/Clinoptilolite Deposit

Zeolites: naturally occurring ion-exchange minerals

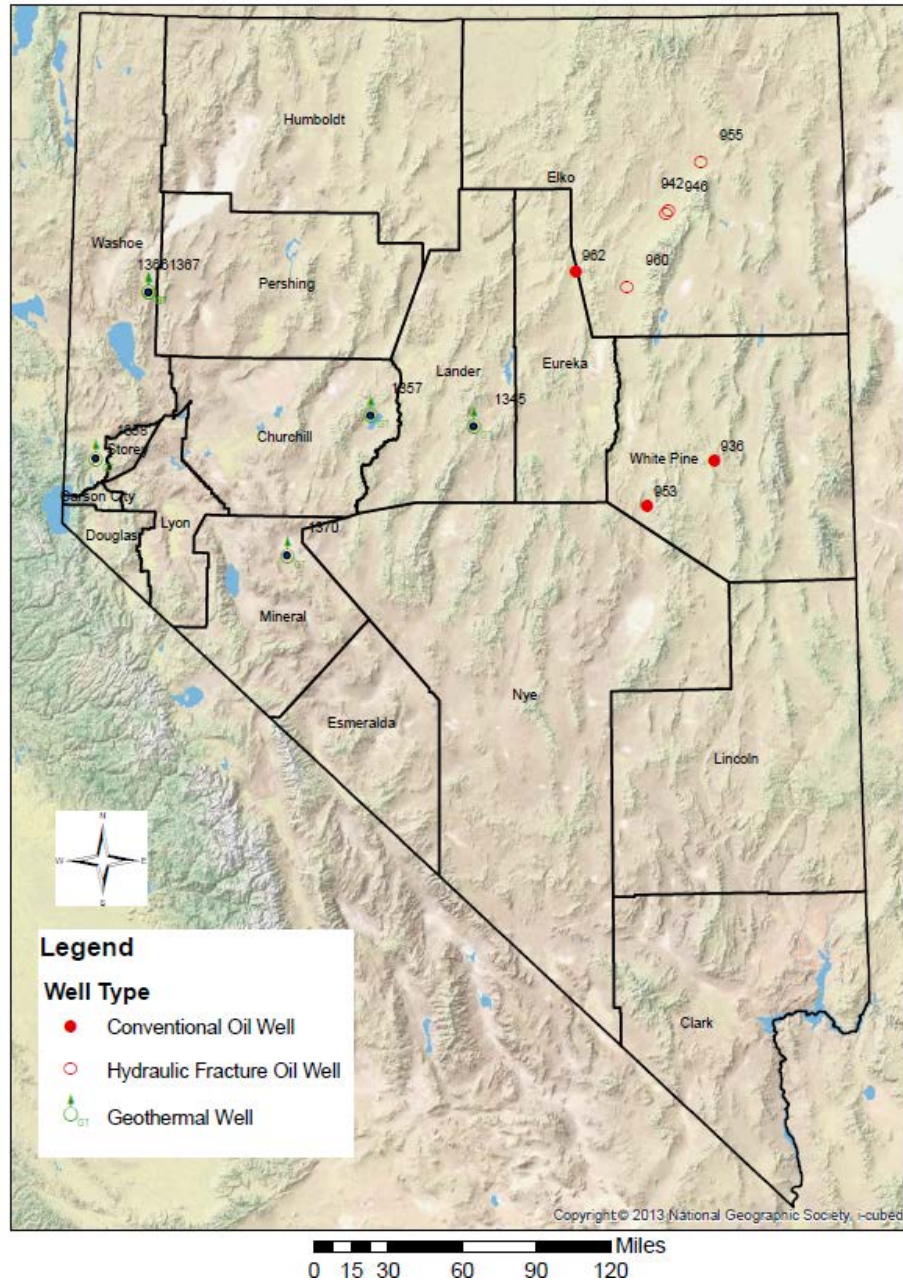
- **Formed through alteration of a Tertiary vitric (glassy) ash-flow tuff by alkaline ground**
- **Clinoptilolite (Clino) has unique chemical and physical properties that allow for cation exchange, gas adsorption, and water absorption/desorption**
- **Applications: radioactive waste control, aquaculture, water filtration and purification, and animal feed (lowers ammonia & pH)**





FLUID MINERALS PERMITTING AND DRILLING ACTIVITY

- 7 OIL EXPLORATION WELLS DRILLED
- 5 GEOTHERMAL EXPLORATION OR PRODUCTION WELLS DRILLED



Nevada Geothermal Energy

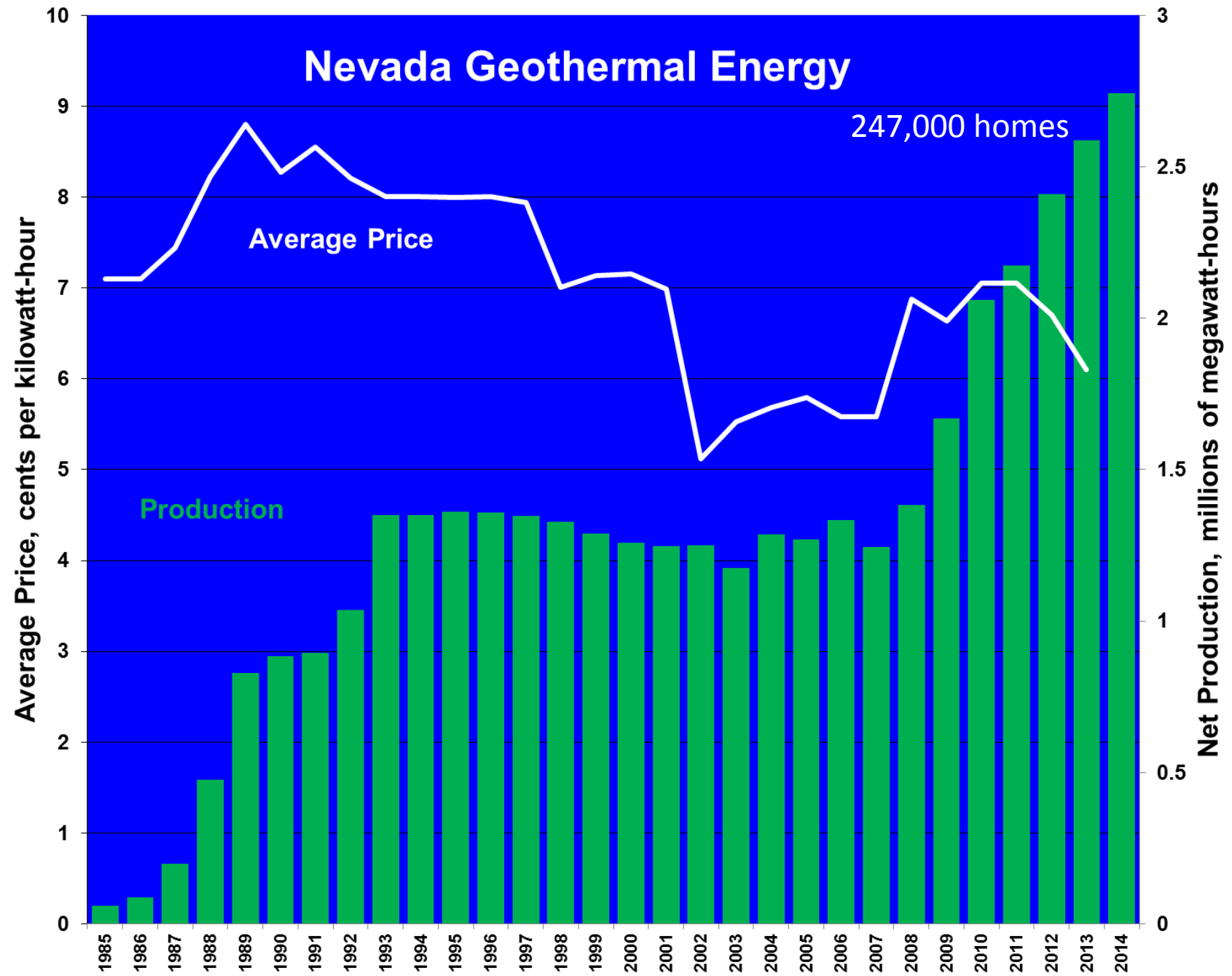
247,000 homes

Average Price, cents per kilowatt-hour

Average Price

Production

Net Production, millions of megawatt-hours





Beowawe geothermal plant, Lander County – 30 years of geothermal production



2015 GEOTHERMAL DRILLING AND EXPANSIONS:

Ormat Nevada Wild Rose Plant 1 – 22.5 MWH Capacity

Plant 1 utilizes 7 wells

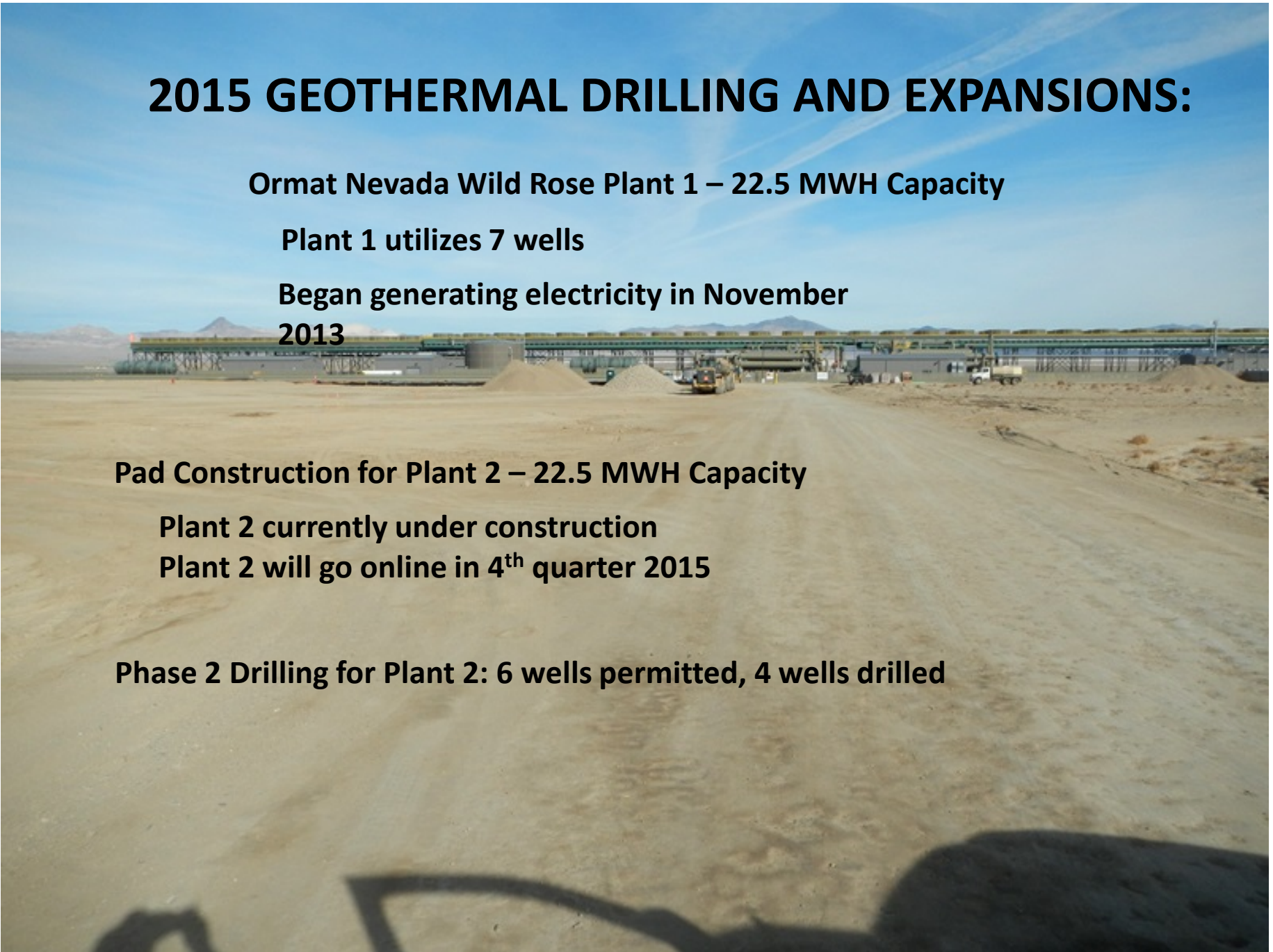
**Began generating electricity in November
2013**

Pad Construction for Plant 2 – 22.5 MWH Capacity

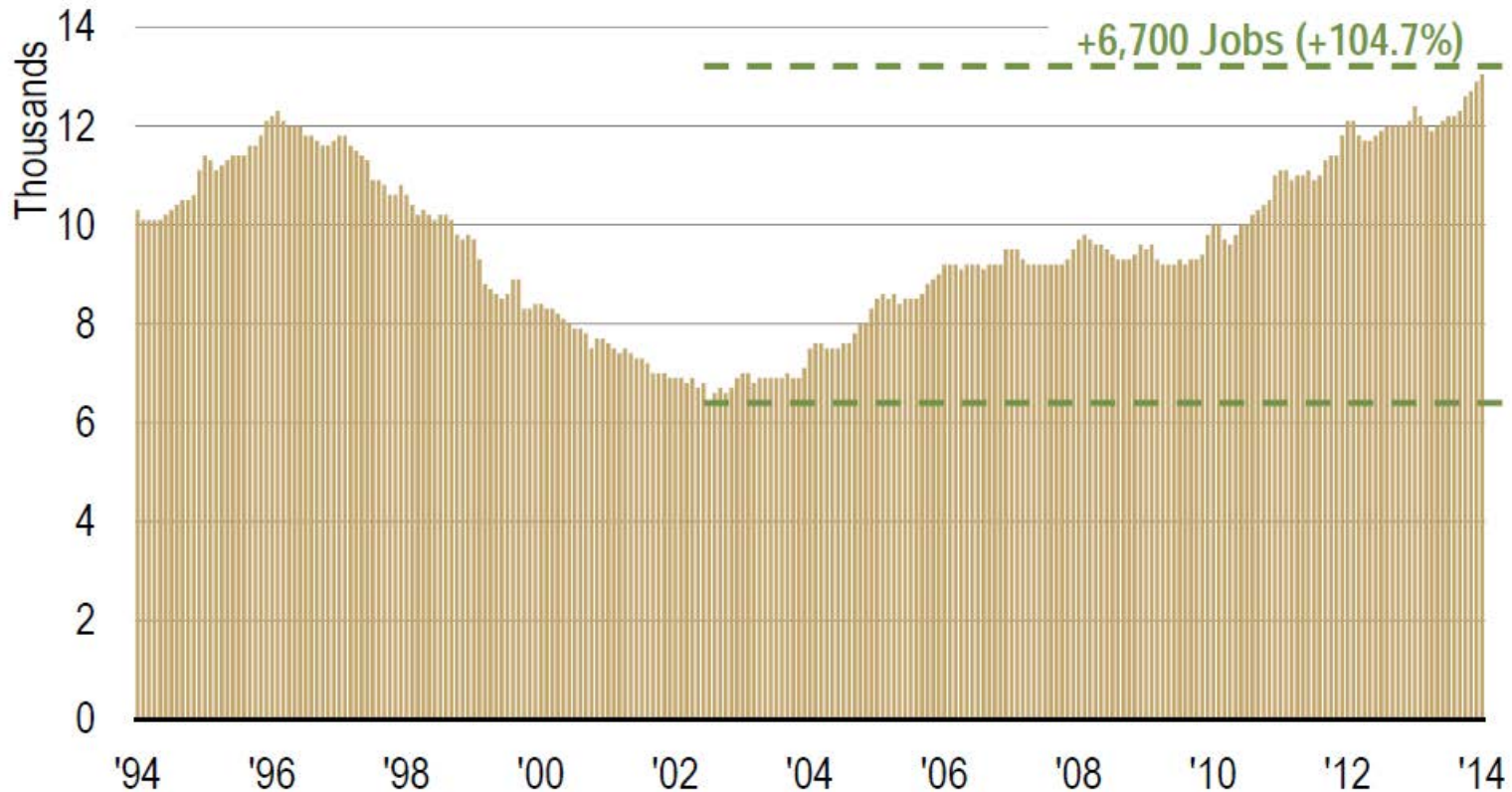
Plant 2 currently under construction

Plant 2 will go online in 4th quarter 2015

Phase 2 Drilling for Plant 2: 6 wells permitted, 4 wells drilled



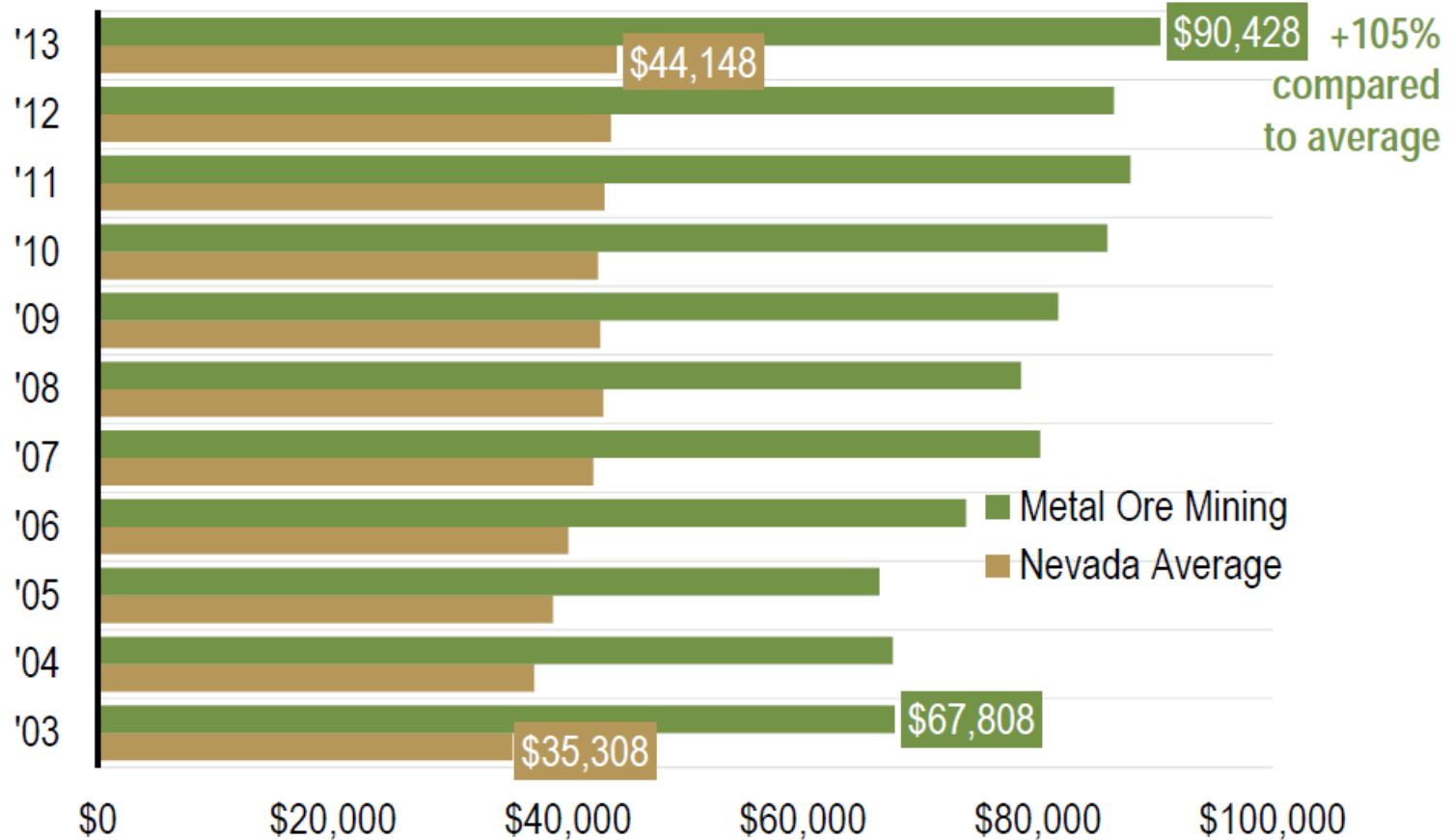
Mining Employment in Nevada



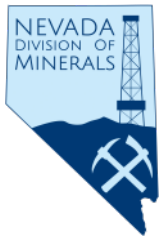
Source: Nevada Department of Employment, Training & Rehabilitation

Nevada Average Annual Wages

Metal Ore Mining vs. Total



Source: Nevada Department of Employment, Training & Rehabilitation



SUMMARY

- **Over \$7.5 billion USD in mineral and energy production**
- **85% of gross revenue from gold**
 - **Increasing % of gold production from UG mining and refractory processing**
- **Directly employs over 13,000 Nevadans**
- **Highest sector wage scale in State**
- **High tech mining and processing, requiring degreed specialists and skilled trades**
- **Mackay School at UNR one of few natural-resource schools in US.**
- **Base metal production growth but we need more US smelting capacity**
- **Geothermal production 2nd to California and growing**
- **First oil production from hydraulic fracturing in 2014**
- **Construction recovery driving increases in aggregates, lime, and gypsum production**
- **Risks:**
 - **Sage Grouse and Federal land withdrawals**
 - **Permitting under NEPA**