

Welcome!

We will get started soon

Agenda

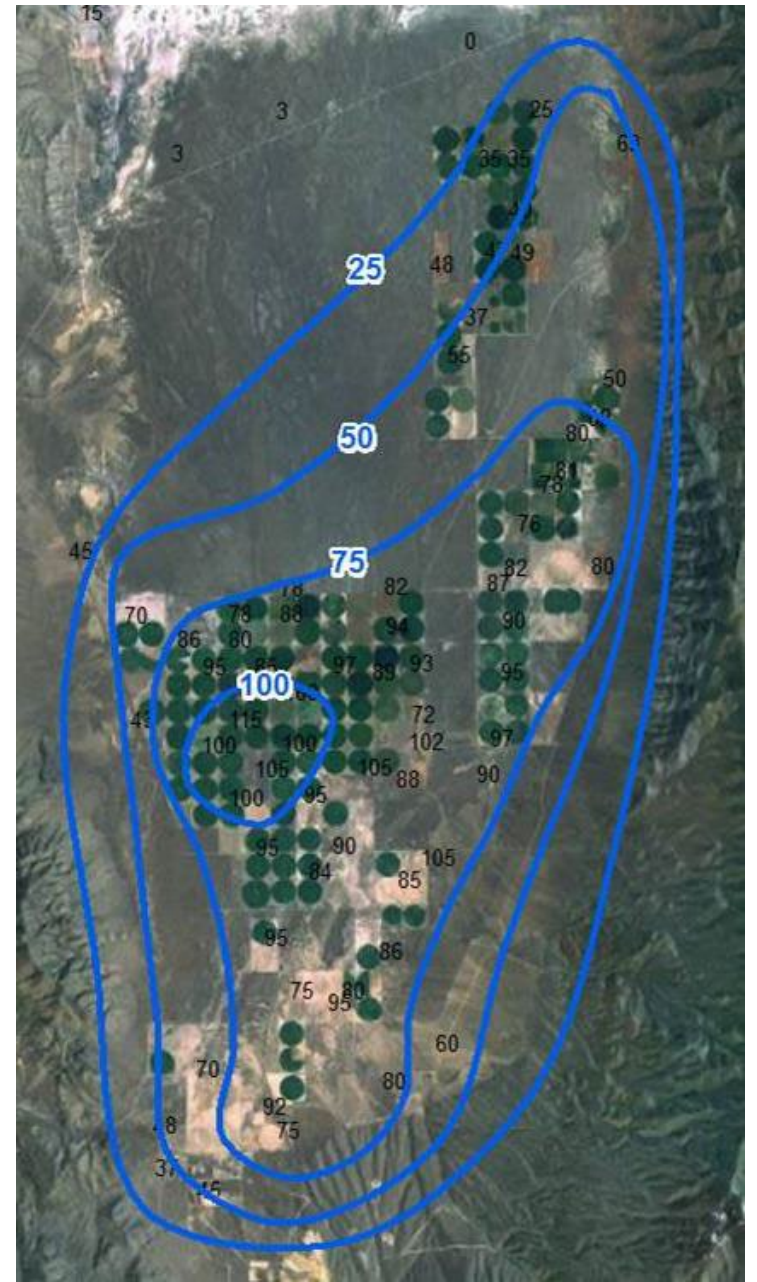
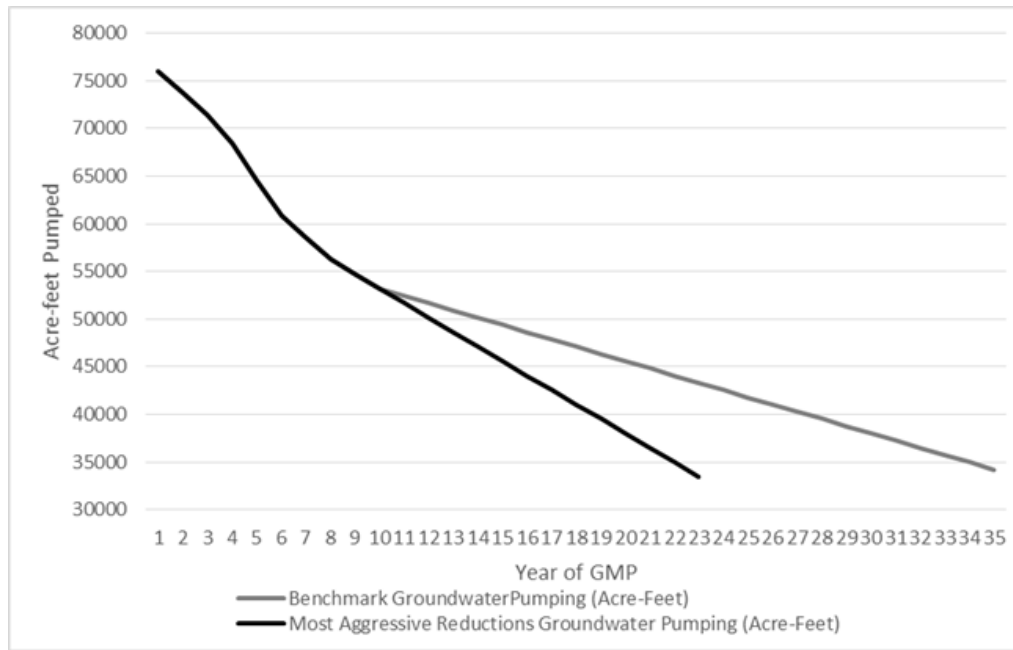
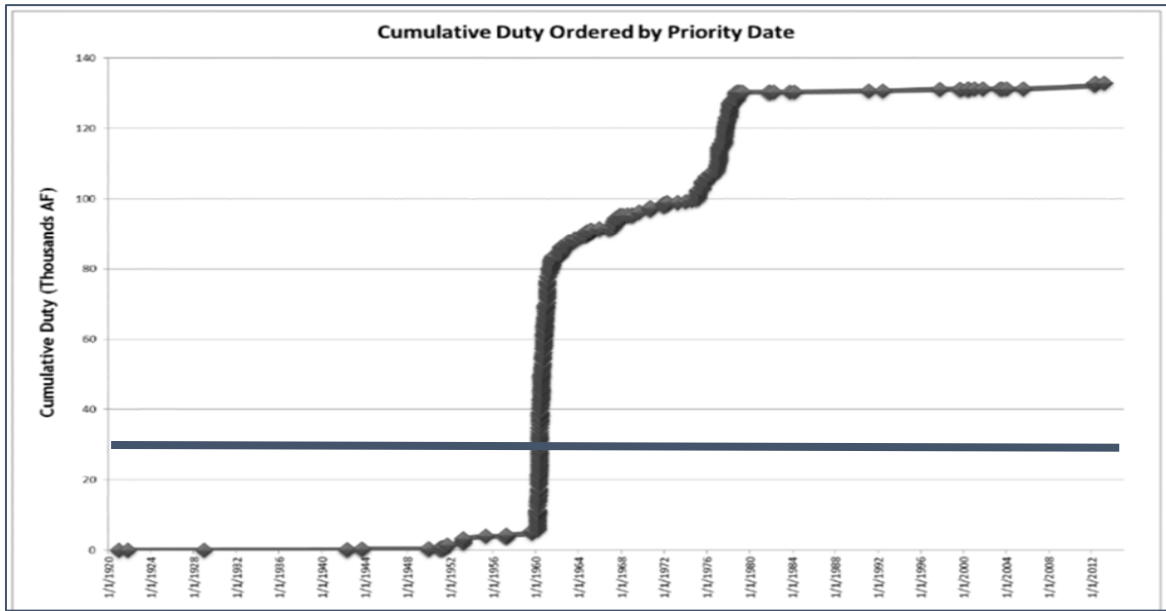
Welcome and Meeting Overview

Presentation of Draft Report

Discussion

Wrap-Up





Full Study Intent

- Assist with decisions about retiring groundwater rights and solar developments in Diamond Valley
- Look at feasibility of permanently retiring groundwater rights and agrivoltaics

Groundwater rights retirement

SENATE BILL NO. 176—SENATOR GOICOECHEA

FEBRUARY 20, 2023

Referred to Committee on Natural Resources

SUMMARY—Establishes provisions relating to the conservation of groundwater. (BDR 48-79)

FISCAL NOTE: Effect on Local Government: No.
Effect on the State: Contains Appropriation not included in Executive Budget.

EXPLANATION—Matter in *bolded italics* is new, matter between brackets ~~omitted material~~ is material to be omitted.

AN ACT relating to water; creating the Account for Purchasing and Retiring Water Rights; establishing the Nevada Water Buy-Back Initiative and the Advisory Committee for the Nevada Water Buy-Back Initiative; requiring the Director of the State Department of Conservation and Natural Resources to purchase certain water rights with money from the Account for purposes of retiring the water rights; creating the Nevada Conservation and Recreation Program; making an appropriation; and providing other matters properly relating thereto.

Legislative Counsel's Digest:

1 Under existing law, any person who wishes to appropriate public waters, or to
2 change the place of diversion, manner of use or place of use of water already
3 appropriated, must apply to the State Engineer for a permit to do so. (NRS 533.325)
4 Existing law further provides that all underground waters within the boundaries of
5 the State are subject to appropriation for beneficial use only under the laws of this
6 State relating to the appropriation and use of water. (NRS 534.020) **Section 5** of
7 this bill creates the Account for Purchasing and Retiring Water Rights, to be
8 administered by the Director of the State Department of Conservation and Natural
9 Resources, and requires that the money in the Account only be expended for the
10 purchase of water rights in groundwater basins that are over-appropriated. **Section 6**
11 of this bill establishes the Nevada Water Buy-Back Initiative in the Nevada
12 Conservation and Recreation Program, to be administered by the Director, and
13 establishes requirements for the purchase and retirement of water rights.
14 **Section 6.4** of this bill requires the State Engineer to retire water rights
15 purchased by the Nevada Water Buy-Back Initiative.
16 **Section 6.2** of this bill establishes the Advisory Committee for the Nevada
17 Water Buy-Back Initiative within the Department and requires the Advisory



Nevada Water Conservation and Infrastructure Initiative

Water Rights Retirement Program:

The NWCII will provide up to \$25 million in grant funds for projects that implement strategic and innovative water retirement programs in ground water basins that are over-appropriated. Prospective grant applications should demonstrate effective and scalable programs for the retirement of ground water rights in over-appropriated ground water basins.

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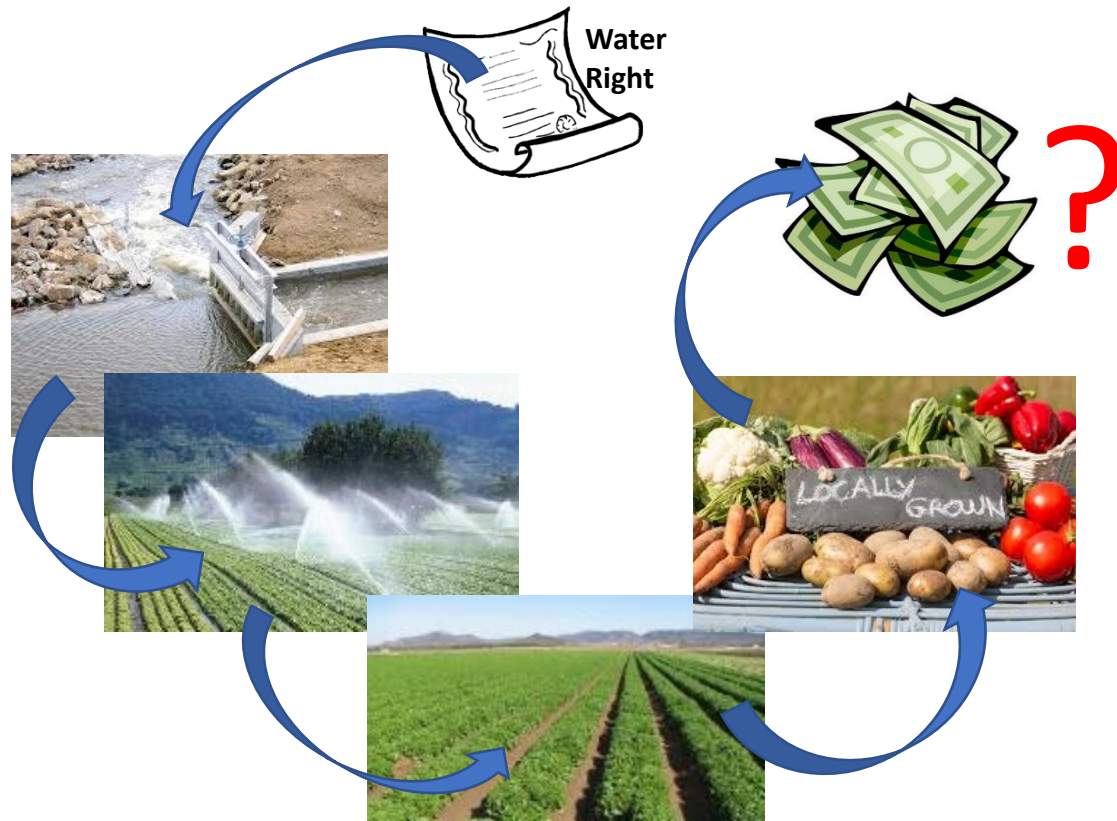
>12,000 AF of groundwater rights applied for in Diamond Valley
(about 3,000 acres)



Groundwater rights retirement considerations

- Several states have implemented groundwater right retirement programs
 - Conservation Reserve Enhancement Program (CREP)
 - Groundwater conservation easements
- Erosion, weeds, rodents
- Alternative uses of the land
 - Dryland agriculture or grazing
 - Renewable energy production
 - Agrivoltaics
- Valuing groundwater rights for retirement

Water rights valuation



- Real Estate vs Water Right Valuation
 - Real Estate: straight forward, normally based only on comps (readily available)
 - Cost: \$hundreds - \$low thousands
 - Water Rights: complex, sparse information, normally requires multiple methodologies
 - \$10k - \$25k+ depending on complexity
- Our Research
 - A full valuation was beyond the scope of this research
 - Completed foundational research to prepare & lower cost of future valuations.

Valuation: Comparable Sales

Sale #	Year	Grantor	Grantee	AF	Water Type
1	2023	Individual	Eureka County	4	Irrigation
2	2023	Individual	Eureka County	6	Irrigation
3	2023	Ag Company	Individual	6	Irrigation
4	2021	Ag Company	Eureka County	2	Irrigation
5	2021	Ag Company	Eureka County	2	Irrigation
6	2021	Ag Company	Eureka County	2	Irrigation
7	2020	Individual	Eureka County	2	Irrigation
8	2020	Individual	Eureka County	4	Quasi-Municipal
9	2018	Individual	Individual	4	Irrigation
10	2015	Mining Company	Individual	387	Irrigation
11	2014	Developer	Individual	10	Quasi-Municipal
12	2013	Developer	Individual	18	Quasi-Municipal

Method Overview

- Same as Real Estate
- Can be difficult to find sales truly comparable to rights being valued
- Often not enough transactions in rural areas.

Research Overview

- Review of Eureka County Recorder documents - not likely a complete record.
- Records in *grey* are transfers to Eureka County to fulfill water county water right dedication requirements for the creation of new parcels.
- Volumes are low – not a good comparison to value full farm water rights.
- Old transactions likely do not factor in GMP.

Valuation: Income Capitalization

Alfalfa Hay - Treasure Valley - 2019				Number of acres: 150	
Item	Quantity Per Acre	Unit	Price or Cost	Total Value	Value or Cost/Acre
Gross Returns					
Alfalfa Hay	7.50	ton	160.00	180,000	\$1,200.00
Total Gross Returns				\$180,000	\$1,200.00
Operating Inputs					
Fertilizer:					
Dry Nitrogen	15.00	lb	0.42	\$10,598	\$70.65
Dry P2O5	75.00	lb	0.41	945	6.30
K2O	80.00	lb	0.31	4,613	30.75
Sulfur	40.00	lb	0.22	3,720	24.80
				1,320	8.80
Pesticides:					
Metribuzin 75DF	1.00	lb	16.00	\$3,188	\$21.25
Warrior II w/Zeon Tech	3.00	fl oz	1.75	2,400	16.00
				788	5.25
Custom & Consultants:					
Custom Fertilize	1.00	acre	7.50	\$45,000	\$300.00
Custom Swath & Rake	4.00	acre	30.00	1,125	7.50
Custom Bale: 1-ton	7.50	ton	18.00	18,000	120.00
Custom Haul & Stack: 1-ton	7.50	ton	5.00	20,250	135.00
				5,625	37.50
Irrigation:					
Water Assessment	1.00	acre	57.00	\$9,150	\$61.00
Repairs - Conc. Ditch	1.00	acre	4.00	8,550	57.00
				600	4.00
				0	0.00
Machinery:					
Fuel - Gas	1.28	gal	3.25	\$2,284	\$15.23
Fuel - Diesel	1.65	gal	3.00	624	4.16
Fuel - Road Diesel	0.63	gal	3.50	743	4.95
Lube	1.00	\$	1.51	331	2.21
Machinery Repair	1.00	\$	2.40	227	1.51
				360	2.40
Labor:					
Equipment Operator Labor	1.20	hrs	22.50	\$16,949	\$113.00
Irrigation Labor	4.90	hrs	17.55	4,050	27.00
				12,899	86.00
Interest on Operating Capital at 7.00%				\$2,052	\$13.68
Total Operating Costs				\$89,220	\$594.80
Operating Costs per Unit				\$11,896	\$79.31
Net Returns Above Operating Costs				\$90,780	\$605.20
Ownership Costs					
General Overhead				2,250	15.00
Land Rent				33,750	225.00
Management Fee				7,050	47.00
Property Taxes				0	
Property Insurance				221	1.47
Investment Repairs				0	
Capital Recovery - Equipment				3,501	23.34
Alfalfa Establishment - Est. Amort. Cost				11,009	73.39
Total Ownership Costs				\$57,780	\$385.20
Ownership Costs per Unit				\$7,704	\$51.36
Total Costs per Acre				\$147,000	\$980.00
Total Cost per Unit				\$19,600	\$130.67
Returns to Risk				\$33,000	\$220.00

Example Crop Budget: SW Idaho, 2019.

The Last Crop Budget for Diamond Valley was published in 1996.

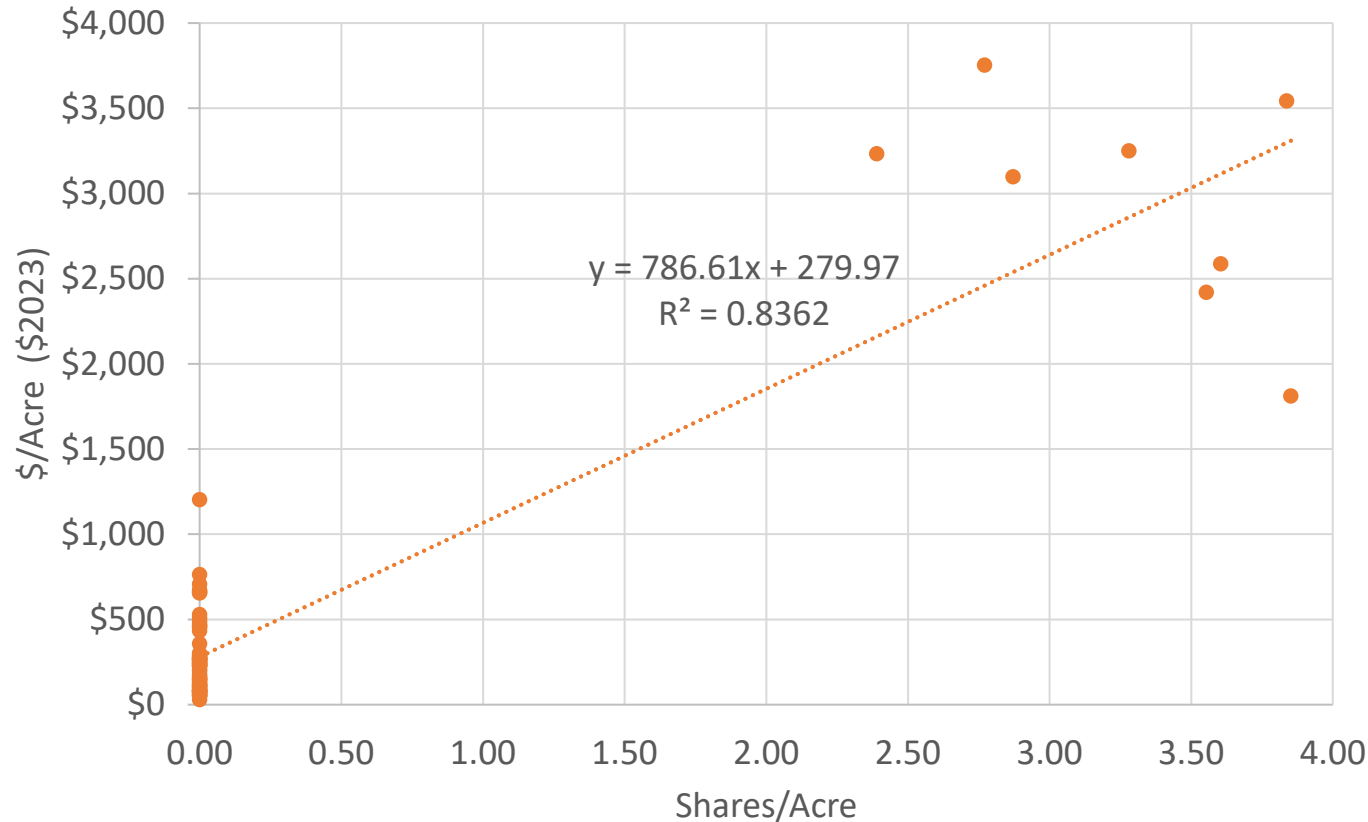
Method Overview

- Calculate the net revenue from using the water right
- Usually applied to irrigated agriculture
- Can suffer from using income/expenses not specific to an area

Research Overview

- Hansford (2023) prepared a report for CNRWA & HRBWA
- Included conclusions for Diamond Valley
- Utilized Crop Budget models from NV (1996 & 2006) as well as Idaho and Utah to estimate Diamond Valley.

Valuation: Land Price Differential



Method Overview

- If irrigated & non-irrigated land is otherwise the same, the difference in value is the value of the water rights.

Research Overview

- Use public records to determine sales, water right locations and the average number of shares across a transacted property.
- Issues with this model:
 - Few irrigated land transactions (9)
 - Not enough dryland sales in Diamond Valley (used dryland sales from surrounding area)
 - Long time period – old transactions do not factor in GMP

How do you value water that is going away?

- Value using volume-agnostic “shares” where possible
- Use recent land & water right transactions
- Use allocations in GMP to run crop budget models under different water supplies.

Year of GMP	Allocation in acre-feet per share (Appendix G)
1	0.670
5	0.569
10	0.469
15	0.435
20	0.402
25	0.368
30	0.335
35	0.301

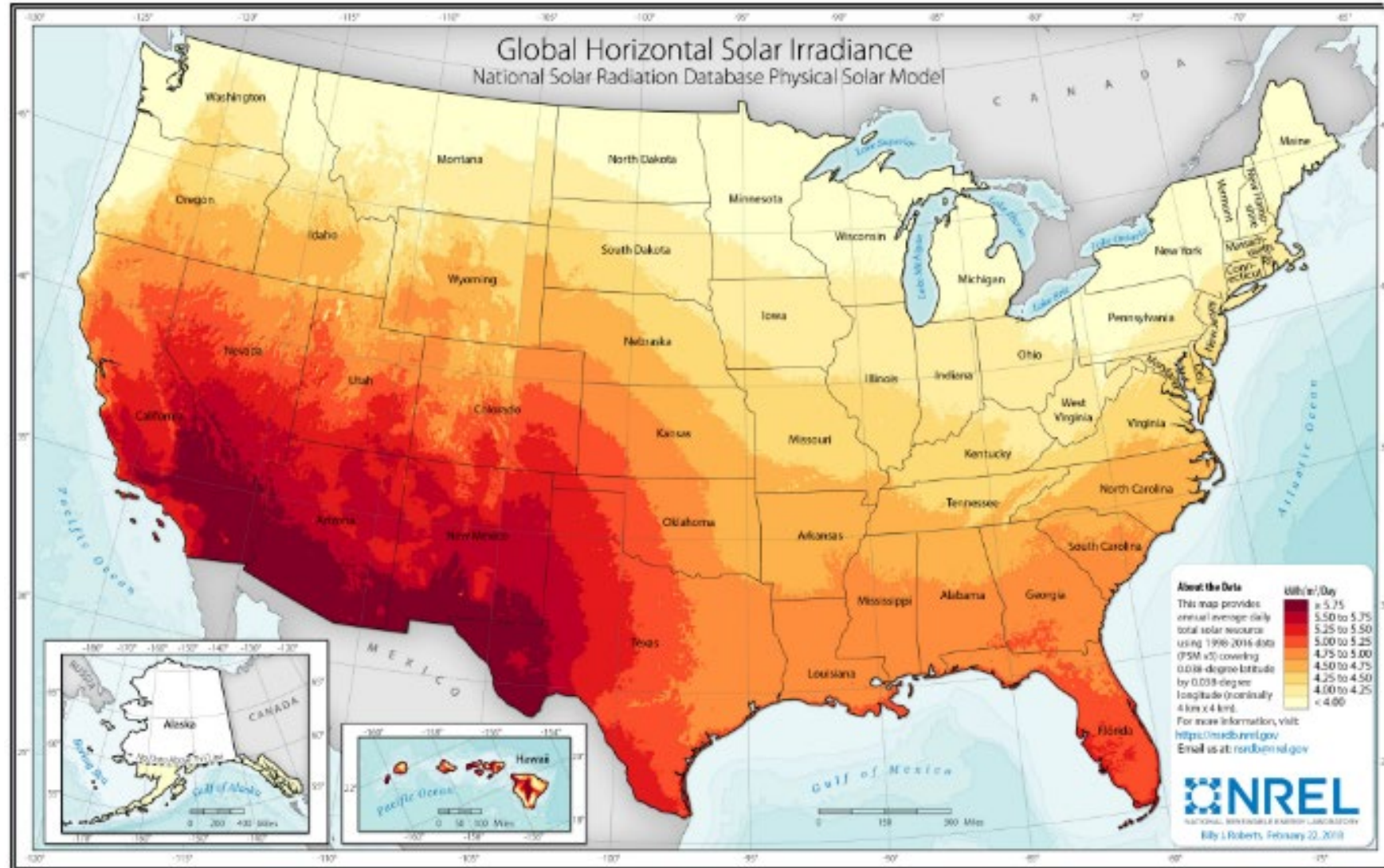
Groundwater rights retirement takeaways

- Establish fair and robust system that effectively conserves water
 - Valuation of groundwater rights will require complex analysis using multiple methods
 - Need general/average data for Diamond Valley hay operations
 - Any valuation of groundwater rights should be done using the GMP's system of shares in order to be allocation agnostic
- Address weeds, rodents, and establishment of vegetation
- Compensation for capping wells or vegetating land may be needed
- Allowance of small amounts of water may be necessary
- Consider what can be done with the land after irrigation ceases

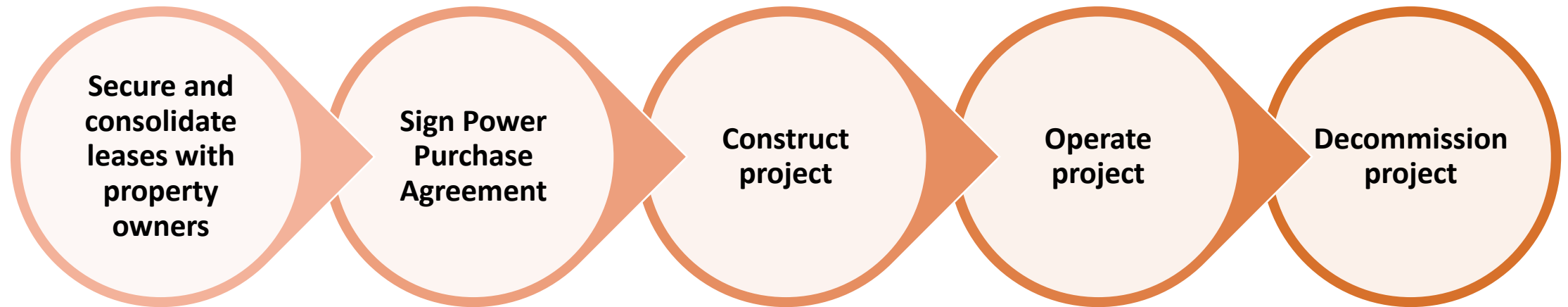
A wide-angle photograph of a solar farm in a desert. The solar panels are arranged in long, parallel rows that stretch towards the horizon. The ground is dry and sandy. In the background, there are low mountains under a clear, bright blue sky. A utility box is visible in the foreground, partially obscured by the text.

Solar development

Solar development



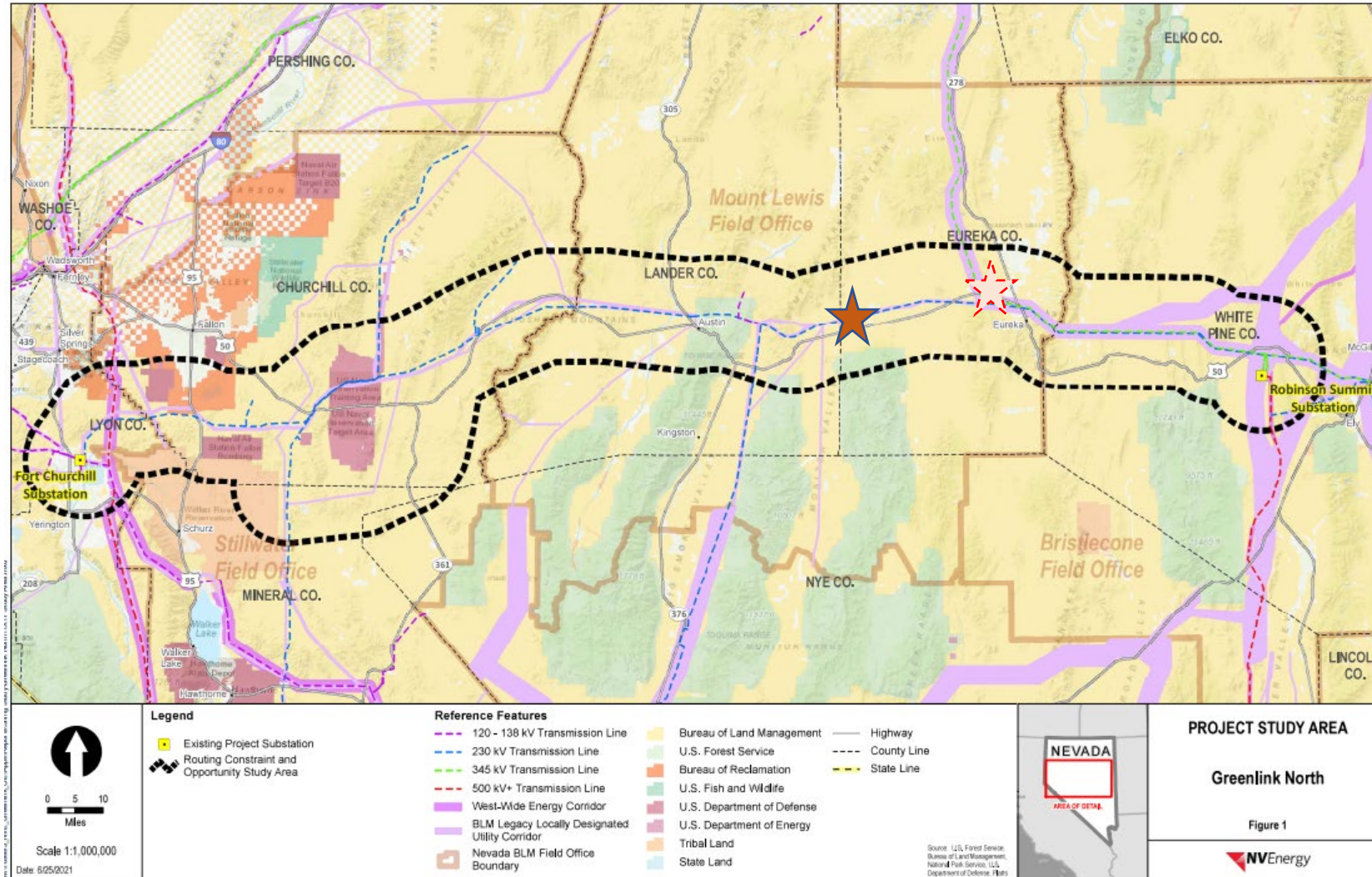
Solar development, operation, and decommissioning process



A landscape view of high-voltage power transmission towers and lines stretching across a desert valley with mountains in the background. The towers are tall, lattice-structured metal structures, and the lines are thick and sag between them. The foreground is filled with green desert vegetation, including Joshua trees and shrubs. The background shows a range of mountains under a clear sky.

Interconnection and Transmission

Interconnection and transmission



Additional Considerations for Solar

14

Number of projects proposing to connect to GLN

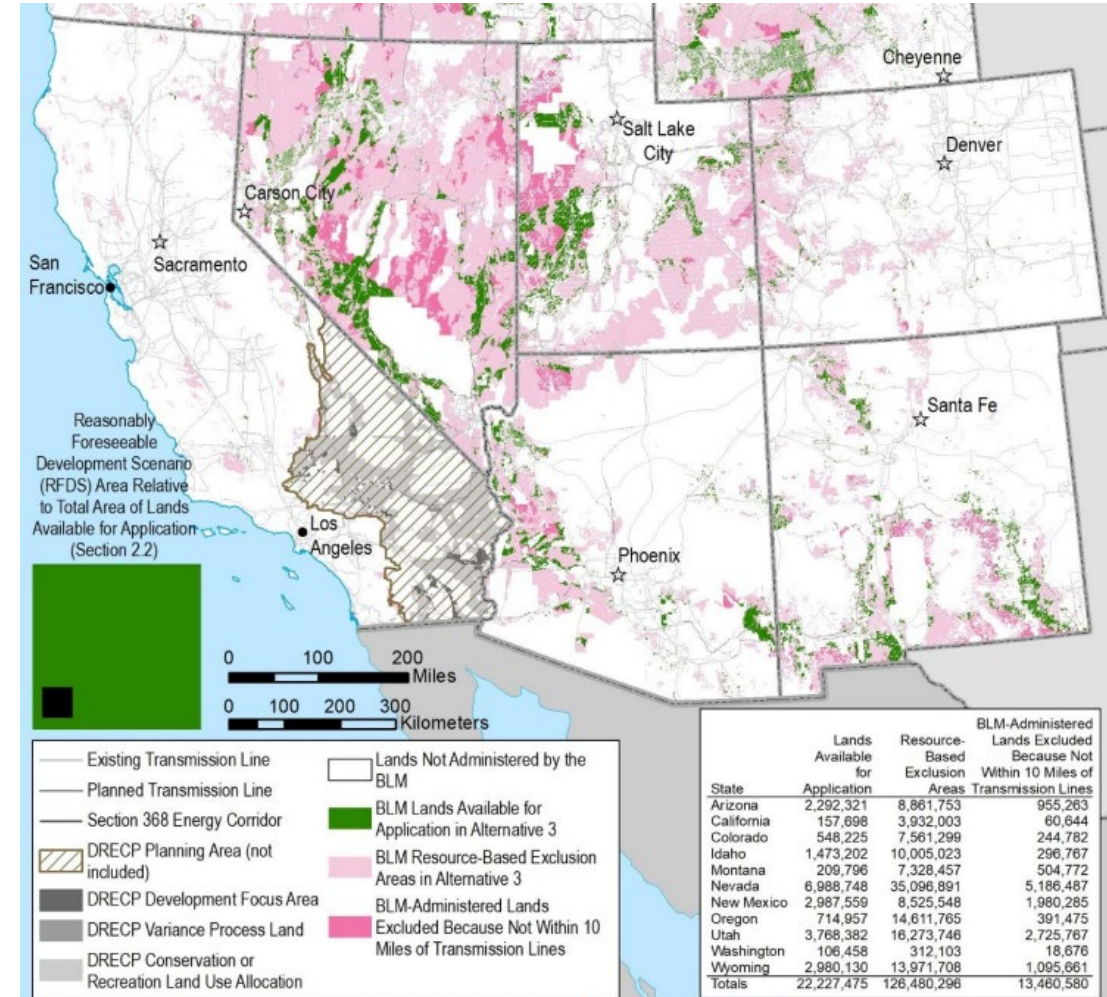
11,400

Megawatts of proposed generation of the 14 projects

1,275

Import capacity (in MW) of N. NV transmission system

BLM Solar PEIS Alternative 3



Agrivoltaics

Definition: Photovoltaic solar generation infrastructure on agricultural lands that are still being used for agriculture



- Cropping beneath and alongside panels
- Dryland agriculture
- Grazing

Agrivoltaic potential in Diamond Valley

- Share [map tool](#)
- Irrigated portion of center pivot: 125 acres
- Solar PV requires at least 5 acres/MW generated
 - Max energy generation potential ~32 MW per pivot

Distance from transmission line (mi)	Private property with irrigated ag (ac)	Potential energy generation (MW)
1	1,266	253
5	4,781	956
10	27,194	5,439

Agrivoltaics takeaways

- Can diversify income
- There could be tax implications
- Irrigated soil types in DV are well-suited to dryland agriculture
- Plant yields with agrivoltaics vary
- Grazing of livestock, esp. sheep, is common with agrivoltaics
- Solar panels may improve water use efficiency
- Crops may improve solar panel efficiency
- Effective power purchase agreements or solar leases may reduce risk
- Resources for more information:
 - [Agrisolar clearinghouse](#)
 - [American Solar Grazing Association](#)
 - Department of Energy [agrivoltaics website](#)
 - [Agrivoltaics Index](#)

Full Study Phases

- Phase 1: Community scoping and focus group meetings and related summary report;
 - Report available at <https://www.eurekacountynv.gov/departments/natural-resources/feasibility-of-agrivoltaics-coupled-with-groundwater-rights-retirement-study/>
- Phase 2:
 - Examine approaches for water rights retirement under circumstances of reduced water availability;
 - Compile land use, relevant legal and regulatory mechanisms, groundwater, electrical infrastructure, socioeconomic, and other relevant data;
 - Community meeting to present draft findings and solicit community input;
 - Meeting currently scheduled for February 2, 2024
 - Final report that incorporates community input.

We are here



Discussion

New Requirement on Diamond Valley GMP – SB 113

Beginning on October 1, 2033, the State Engineer shall review any groundwater management plan approved before October 1, 2023, to determine whether there has been significant progress towards stabilizing the water level of the basin, as determined by the State Engineer. If the State Engineer determines there has not been significant progress, the State Engineer shall...order:

- (a) The groundwater management plan dissolved; and
- (b) That withdrawals, including, without limitation, withdrawals from domestic wells, be restricted in that basin to conform to priority rights until the water level of the basin is stabilized.