Water Resources Development and Management Plan

2014 West Slope Update

El Dorado Board of Supervisors

February 3, 2015

2014 Update Objective

Incorporate and analyze new local, regional and statewide information into EDCWA's water resources planning in order to:

1) support current ongoing efforts to secure supplemental water supplies and other Water Agency initiatives;
2) provide El Dorado County with water supply/demand information for County's West Slope areas as it meets its *Public Water Supply Planning Ordinance* obligations.

New Information Developed Since 2007 Plan

- State mandated water conservation
- Slower than anticipated growth due to severe recession
- New demand assumptions in recent purveyor master plans
- Annexations
- Recent and ongoing drought impacts
- New information on potential climate change impacts

New Information Developed Since 2007 Plan

- 2014 West Slope Update
  - Documents changed conditions and assumptions
  - Develops various demand and supply scenarios based on the new information
  - Identify additional water supply need
- Review and Input
  - Purveyors staff
  - County Planning/Agriculture staff
  - Agricultural interest

Land Use Assumptions

Land Use Assumptions

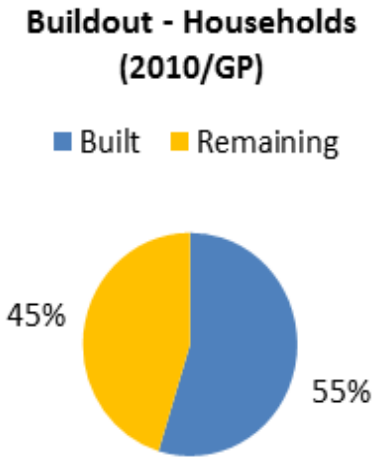
- Voter approved 2004 EDC General Plan
  - Housing and jobs projections
  - Agricultural Districts

- Land use water demand drivers
  - Housing
  - Economic Activity
  - Agricultural land use

Land Use Assumptions

West Slope Housing

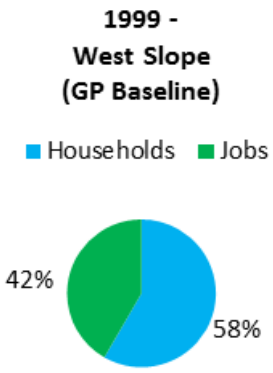
- 36% built out in 1999 (GP Baseline)
- 55% built out in 2010

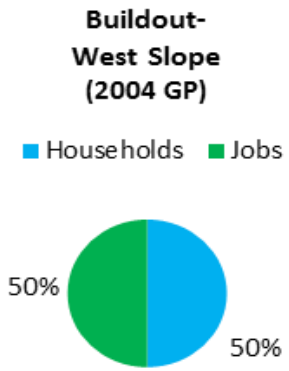


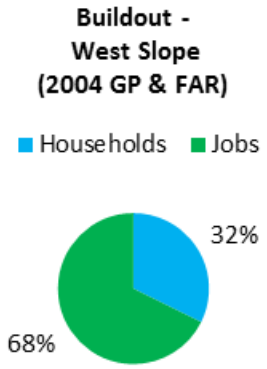
Land Use Assumptions

West Slope Economic Activity

- Increasing jobs to housing ratio



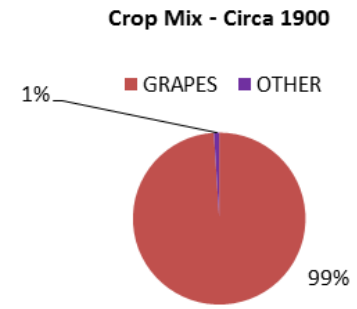


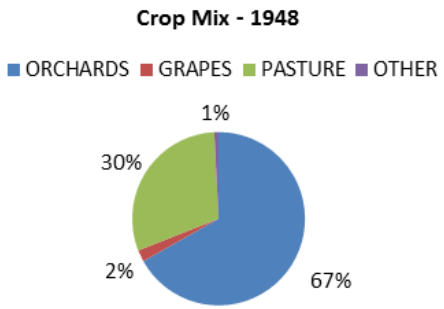


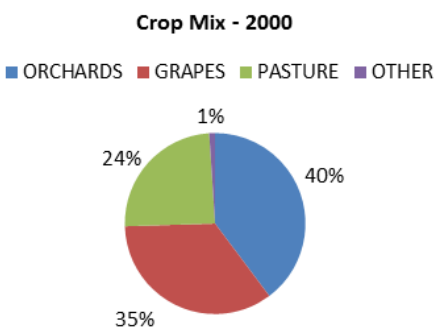
Land Use Assumptions

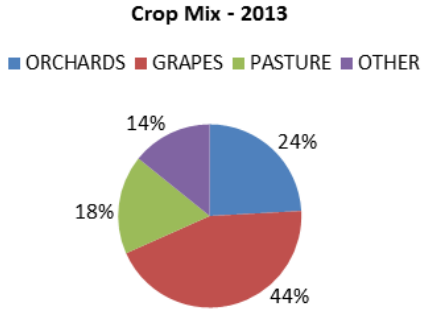
West Slope Agricultural Land Use

- Expansion of cultivated land
- Crop mix





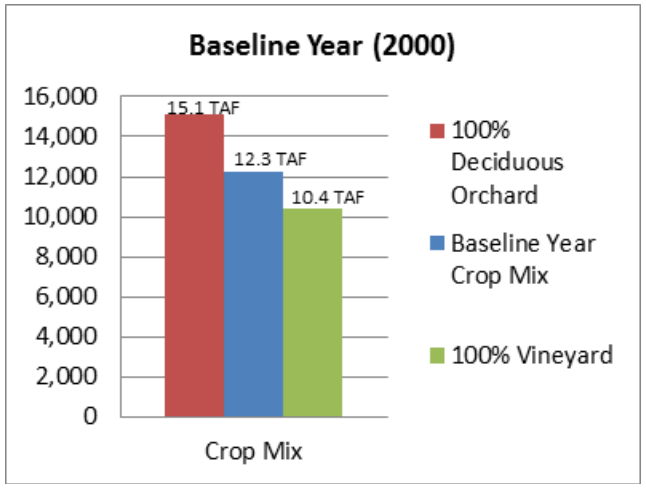


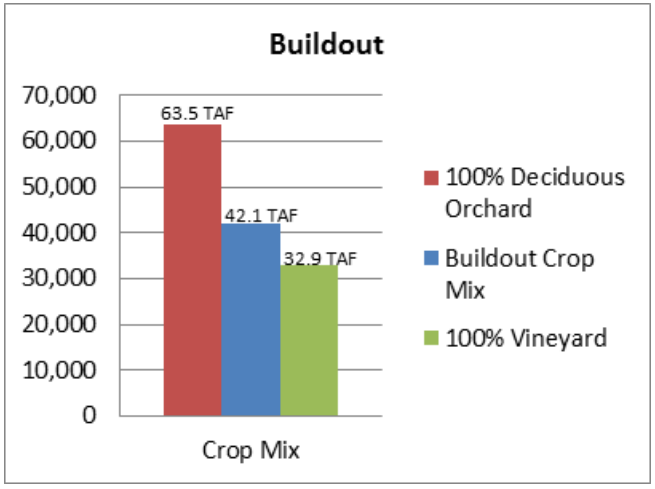


Land Use Assumptions

West Slope Agricultural Land Use

- Year 2000 - 4,800 acres
- Year 2013 – 5,300
- Buildout potential - 22,000 acres





Water Demand Projections

Urban Demand Projection Assumptions

- New per capita demand factors developed by purveyors
  - 20x2020 water conservation factors used
- Adjustment for increased economic activity
  - 8% based on 2004 General Plan ratio of households to jobs
- Floor Area Ratio General Plan Amendment
  - Doubles and triples allowable sq. ft./parcel area
- Favorable Areas
  - Reallocation of areas favorable for annexation into purveyor service area
  - 5,000 acres annexed since 1999 (GP baseline year)

Urban Demand Projection Assumptions

- Potential climate change impacts
  - Water Research Foundation study suggest 5% increase in irrigation demands
- Differential growth rates
  - Based on historic differences on West Slope
  - Low, medium and high growth rate scenarios

Residential Growth Rate Scenarios Adopted for 2014 Update			
	Growth Rate		
El Dorado Irrigation District	1.21%	1.74%	2.33%
Georgetown Divide PUD	.89%	1.28%	1.72%
Grizzly Flat CSD	N/A	1.03%	N/A
Other County Areas	N/A	1.03%	N/A

Agricultural Demand Projection Assumptions

- Agricultural Districts
  - Parcels greater than 10 acres
- Year 2000 crop mix

El Dorado County Historical and Projected Future Irrigated Agricultural Land Use				
Location	2000	2030	2050	Build-Out
	Area (acre)	Area (acre)	Area (acre)	Area (acre)
El Dorado Irrigation District	2,371	3,171	4,271	7,696
Georgetown Divide PUD	1,195	1,948	2,624	3,413
Other County Areas	1,260	1,773	2,634	10,903
Total	4,826	6,892	9,528	22,012[d]

Water Supply

Water Supply Assumptions

- Purveyor supply information and reliability policies
- Ongoing drought effects on supply reliability
  - Reduced supply yield
- Potential climate change impacts on supply reliability
  - EID Stockholm Institute study suggests 10% decrease in supply reliability

Water Supply Reliability Metrics

- Firm Yield
  - Annual quantity that can be met in most, but not all water years types
  - Imposes dry year deficiencies based on purveyor policy
  - Short term water supply management

- Safe Yield
  - Maximum amount of water available in all water year types
  - Based on watershed hydrology and water rights
  - Long term water supply planning

WEST SLOPE SUMMARY

West Slope Additional Water Supply Need w/Conservation Considering Firm Yield Supply (acre-feet)

	Firm Yield Supply	*Urban*			*Agricultural*			*Total Demand*			*Additional Water Supply Need*	
		2012	*2030*	*Build-Out*	*2012*	*2030*	*Build-Out*	*2012*	*2030*	*Build-Out*	*2030*	*Build-Out*
El Dorado Irrigation District	69,100	40,237	51,403	79,316	7,977	9,515	19,218	48,214	60,919	98,534	—	29,434
Georgetown Divide PUD	12,200	3,001	4,120	9,581	7,121	7,621	10,349	10,122	11,741	19,930	—	7,730
Grizzly Flat CSD Total	184	153	187	313	—	—	—	153	187	313	3	129
Other County Areas	—	—	—	12,336	—	—	17,476	—	—	29,812	—	20,560
Western Slope Total	**—**	**—**	**—**	**101,546**	**—**	**—**	**47,043**	**—**	**—**	**148,590**	**3**	**57,854**

WEST SLOPE SUMMARY

West Slope Additional Water Supply Need w/Conservation Considering Safe Yield Supply (acre-feet)

	Safe Yield Supply	*Urban*			*Agricultural*			*Total Demand*			*Additional Water Supply Need*	
		2012	*2030*	*Build-Out*	*2012*	*2030*	*Build-Out*	*2012*	*2030*	*Build-Out*	*2030*	*Build-Out*
El Dorado Irrigation District	59,955	40,237	51,403	79,316	7,977	9,515	19,218	48,214	60,919	98,534	964	38,579
Georgetown Divide PUD	10,541	3,001	4,120	9,581	7,121	7,621	10,349	10,122	11,741	19,930	1,200	9,389
Grizzly Flat CSD Total	165	153	187	313	—	—	—	153	187	313	22	148
Other County Areas	—	—	—	12,336	—	—	17,476	—	—	29,812	—	20,560
Western Slope Total	**—**	**—**	**—**	**101,546**	**—**	**—**	**47,043**	**—**	**—**	**148,590**	**2,187**	**68,677**

DISTRIBUTION OF NEW WATER SUPPLY NEED

West Slope Additional Water Supply Need w/Conservation Considering Safe Yield Supply (ac-ft)

	Safe Yield Supply	*Urban*	*Agricultural*	*Total Demand*	*Additional Water Supply Need*	***% New Supply Need***
		Build-Out	*Build-Out*	*Build-Out*	*Build-Out*	***Buildout***
El Dorado Irrigation District	59,955	68,889	19,218	88,107	28,152	**41%**
Georgetown Divide PUD	10,541	8,495	10,349	18,844	8,303	**12%**
Grizzly Flat CSD	165	313	—	313	148	**0.2%**
Other County Areas assigned to EID		*10,426*		*10,426*	*10,426*	
Other County Areas assigned to GDPUD		*1,086*		*1,086*	*1,086*	
Other County Areas Remaining		*12,336*	*17,476*	*29,812*	*20,560*	
Total Other County Areas					32,072	**47%**
				Western Slope Total	68,677	

For “Other County Area Remaining” 25% urban demands and 100% of agricultural demands are included in the “Additional Water Supply Need.”

Key Findings

- Under short term water supply management policies, all West Slope purveyors have adequate supplies to meet near term demand under historic hydrologic conditions and current firm yield policies.
- Under long term safe yield planning assumptions, new supplies are needed for all West Slope purveyors at buildout of the 2004 General Plan, with approximately 69,000 AFY of additional water supply needed for the entire West Slope.
- The climate change hydrologic regime scenario confirms safe yield is the appropriate metric for assessing long term water supply need.

Key Findings

- Considering unprecedented water rights curtailment in 2014 and prolonged drought conditions, it is prudent for EDCWA and West Slope purveyors to consider all options for augmenting future water supplies and achieving greater water conservation for the West Slope.
- An American River Basin climate change vulnerability assessment supported by all water users reliant on such supplies may be valuable to understanding potential basin specific impacts.
- An EDCWA Office of Water Efficiency would provide needed leadership and funding to assist water purveyors in meeting existing and potential future State mandated water use efficiency.

2014 West Slope Update Uses

- Foundational document for new water supplies
- Build support for projects needed to fill supply gap
- Guide Water Agency annual work plan
- Provide supply/demand information for Public Water Supply Planning Ordinance obligations
- Revisit periodically and adjust as circumstances change

EL DORADO IRRIGATION DISTRICT

EID Urban Demand Assumptions

1) Service Area
   - 2004 General Plan housing projections
   - Per capita water use factor with 2020 water conservation
     - 5% vacancy rate adjustment
     - 8% increased commercial activity
2) Favorable Areas
   - 2004 General Plan housing projections
   - Service Area per capita water use factor
3) Floor Area Ratio General Plan Amendment

Climate Change Scenario

- 5% irrigation demand increase

EID Agricultural Demand Assumptions

- Agricultural District
  - Parcels greater than 10 acres
- Year 2000 Crop Mix
  - 50% Vineyard
  - 50% Deciduous Orchard
  - No growth in Pasture Irrigation

EID Demand Projections

EID Urban and Agricultural Water Demand Projections - Medium Growth Scenario (ac-ft)									
	Urban			*Agriculture*			*Total Demand*		
	2012	*2030*	*Buildout*	*2012*	*2030*	*Buildout*	*2012*	*2030*	*Buildout*
Service Area	40,237	49,438	57,480	7,977	9,515	19,218	48,214	58,953	76,699
Favorable Areas		1,966	10,426					1,966	10,426
FAR GP Amendment			11,409						11,409
Total	40,237	51,404	79,315	7,977	9,515	19,218	48,214	60,919	98,534

EID Supply Assumptions

- Firm Yield
  - 100% of demand met 95 out of 100 years
  - 20% demand deficiency in 5 out of 100 years
  - Additional recycled water
- Safe Yield
  - 100% of demand met 100% of the time
  - Additional recycled water

Climate Change Scenario

- 10% supply decrease

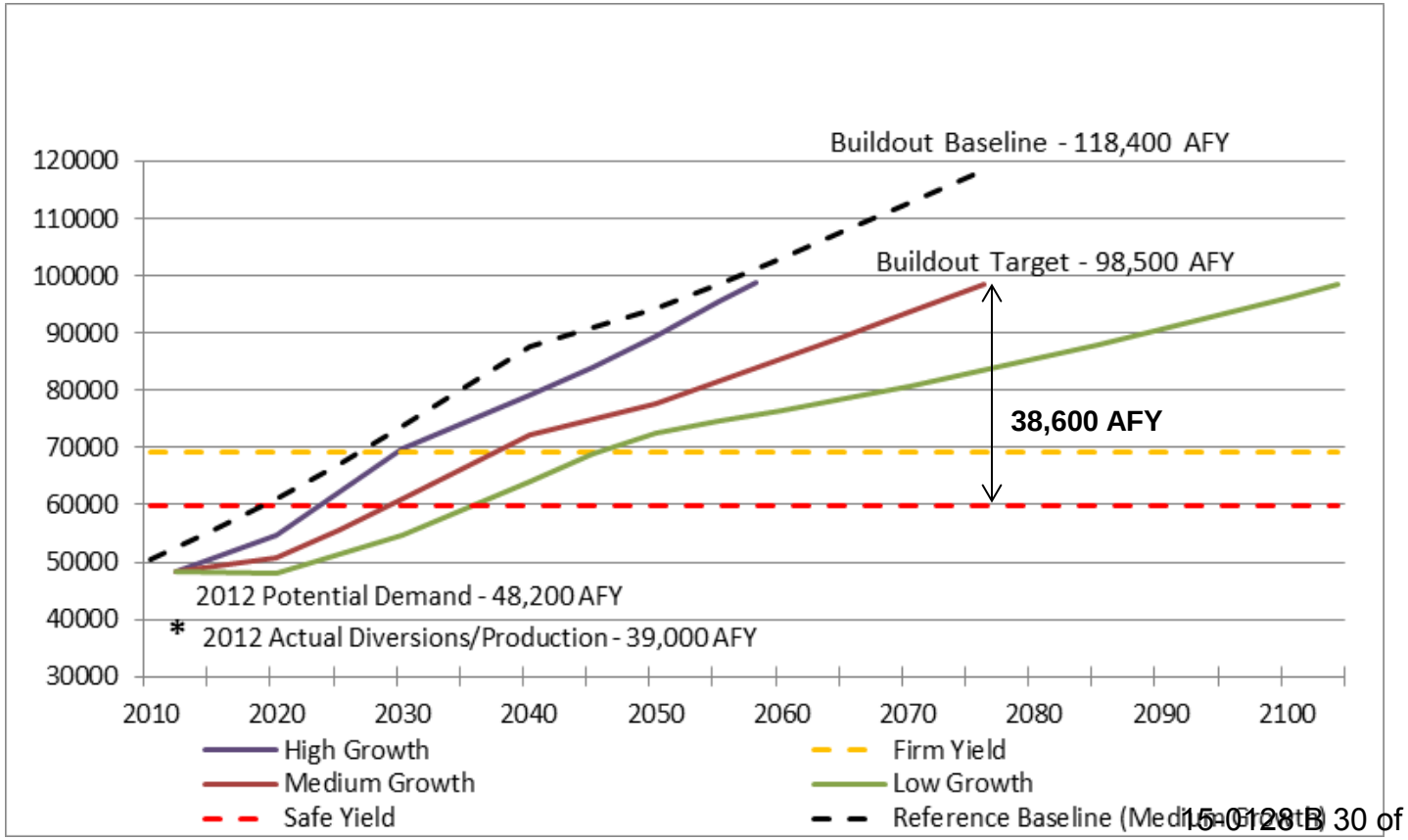
EID Supply Assumptions

El Dorado Irrigation District Firm and Safe Yield Supply (ac-ft)				
Source	Existing Water Supply		Existing and Additional Supply w/50% CVP cutback	
	Firm Yield	Safe Yield	Firm Yield	Safe Yield
Contiguous System	63,500	56,240	63,500	54,355
Recycled Water	3,084	3,084	5,600	5,600
Total	66,584	59,324	69,100	59,955

SOURCE: EID (2013), Table 2

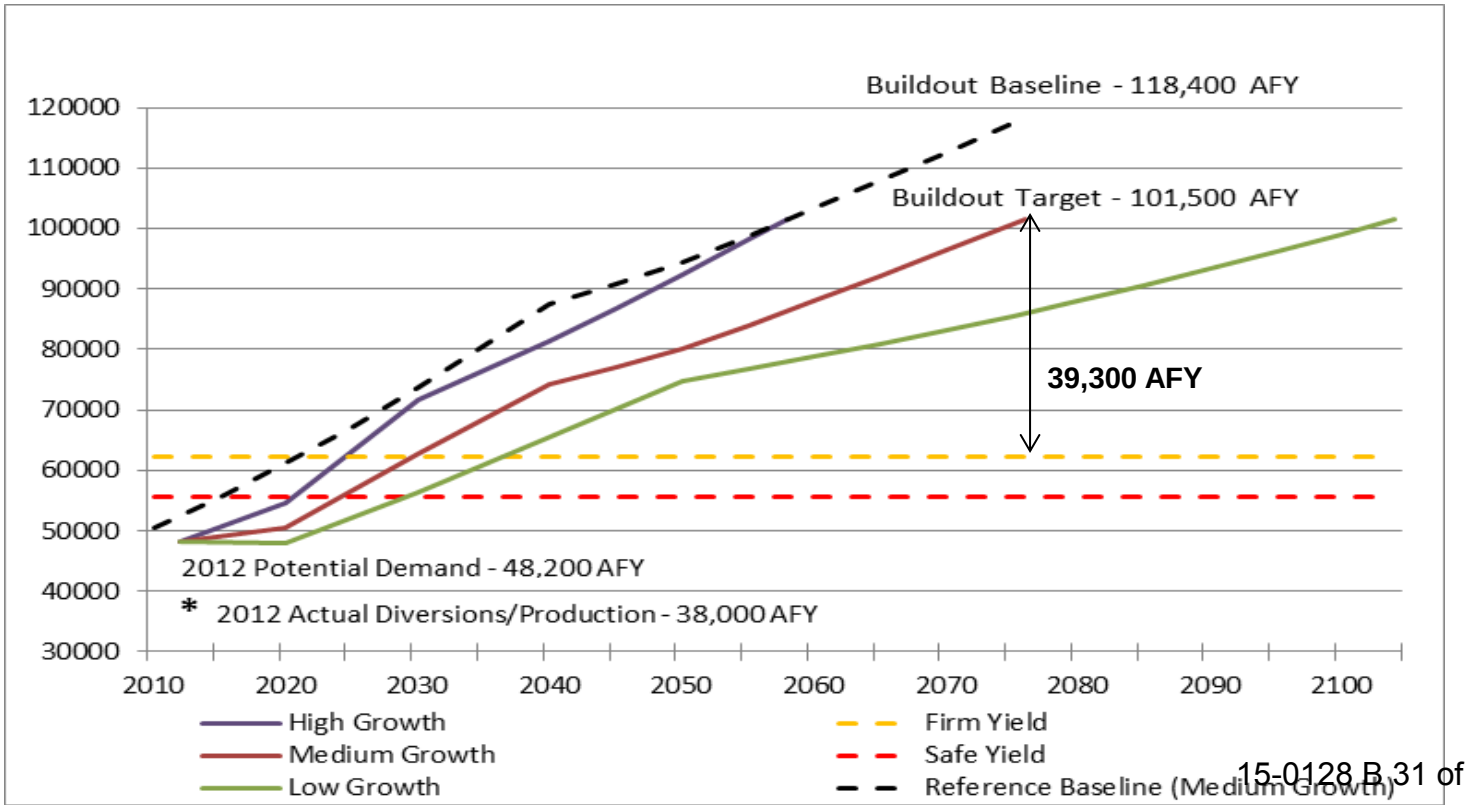
EID Water Supply Need w/Conservation

	Existing/Additional Supply w/50% CVP Cutback (ac-ft)	
	Firm Yield	*Safe Yield*
Existing and Additional Supply	69,100	59,955
Demand w/ Conservation	98,534	98,534
Supply Need	(29,434)	(38,579)



EID Water Supply Need - Climate Change Scenario

	Existing/Additional Supply (ac-ft)	
	Firm Yield	*Safe Yield*
Existing and Additional Recycled Supply	62,190	56,216
Demand w/conservation	101,478	101,478
Supply Need	(39,288)	(45,262)



EID - Closing the Gap

- SMUD Upper American River Project
  - 30,000 to 40,000 acre-feet
  - Critical dry year cut backs at Whiterock
  - No cut backs at Folsom
- Folsom Lake Water Supplies (PL 101-514)
  - 7,500 acre-feet USBR Water Service Contract
  - Dry year cut backs up to 50%
  - Severe cold water pool impact related limitations

EID - Closing the Gap

- Alder Dam and Reservoir
  - 11,250 acre-feet safe yield supply
- Additional water use efficiency
  - More aggressive pipeline replacements
  - Additional conservation beyond 2020 goal

Georgetown Divide Public Utility District

GDPUD Urban Demand Assumptions

1) Service Area
   - 2004 General Plan housing projections
   - Per capita water use factors with 2020 water conservation
     - 5% vacancy rate adjustment
     - 8% increased commercial activity
2) Favorable Areas
   - Service Area GPCD applied
3) Floor Area Ratio General Plan Amendment

Climate Change Scenario

- 5% irrigation demand increase

GDPUD Agricultural Demand Assumptions

- Agricultural District
  - Parcels greater than 10 acres
- Year 2000 Crop Mix
  - 80% Vineyard
  - 20% Deciduous Orchard
  - No growth in Pasture Irrigation

GDPUD Demand Projections

GDPUD Urban and Agricultural Demand Projections- Medium Growth Scenario (ac-ft)									
	Urban			*Agriculture*			*Total Demand*		
	2012	*2030*	*Build-Out*	*2012*	*2030*	*Build-Out*	*2012*	*2030*	*Build-Out*
Service Area	3,001	3,911	7,542	7,121	7,621	10,349	10,122	11,532	17,891
Favorable Areas		209	1,086					209	1,086
FAR GP Amend			953						953
Total	3,001	4,120	9,581	7,121	7,621	10,349	10,122	11,741	19,930

Supply Assumptions

- Firm Yield
  - 100% of demand met in all but critically dry and some dry years
  - 10% urban and 50% agricultural demand deficiency
- Safe Yield
  - 100% of demand met 100% of the time

Climate Change Scenario

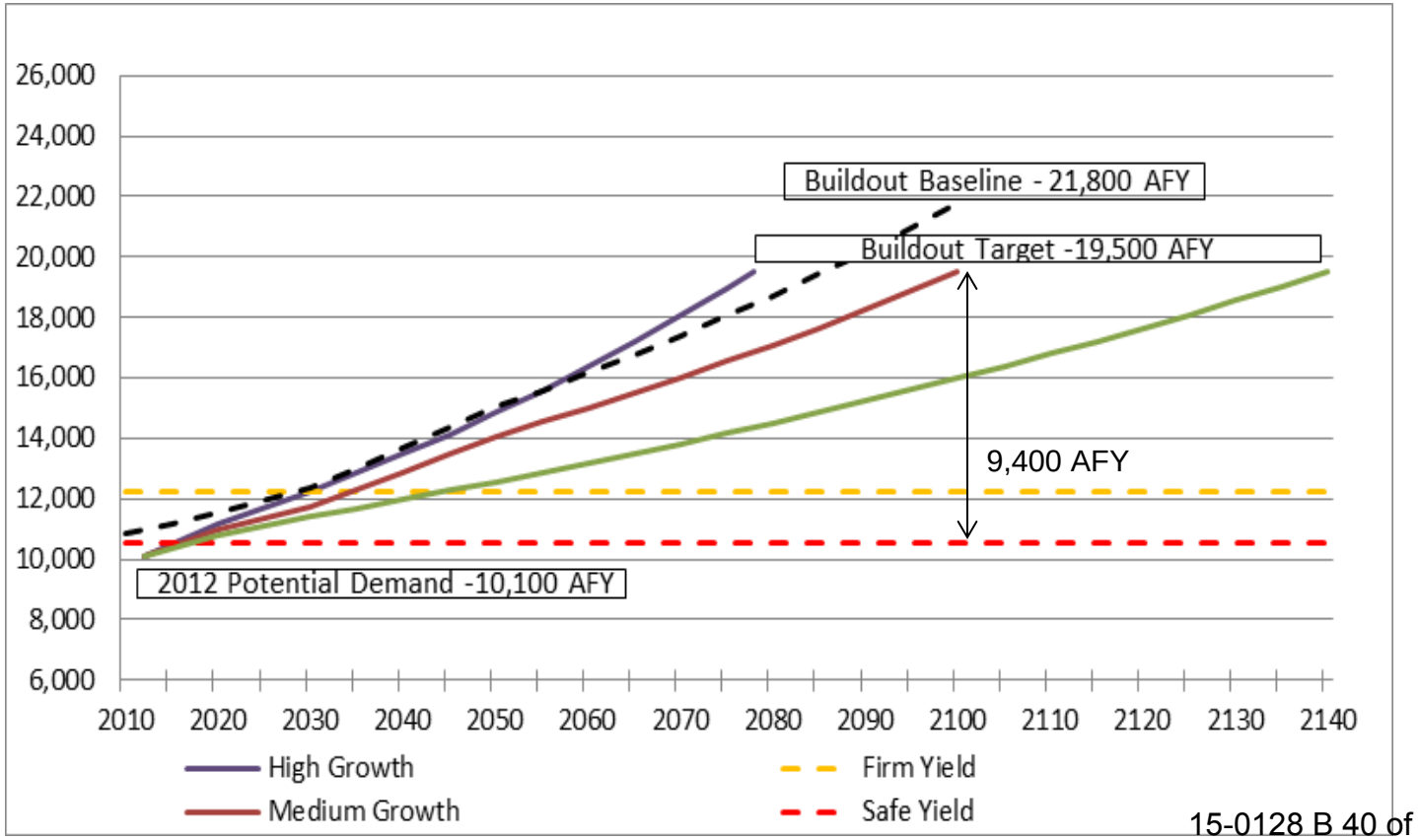
- 10% supply decrease

Supply Assumptions

GDPUD Firm and Safe Yield (ac-ft)		
	Firm Yield	Safe Yield
Stumpy Meadows Reservoir	12,200	10,541
SOURCE: GDPUD (2011), p. 20; GDPUD (2009), p. 19.		

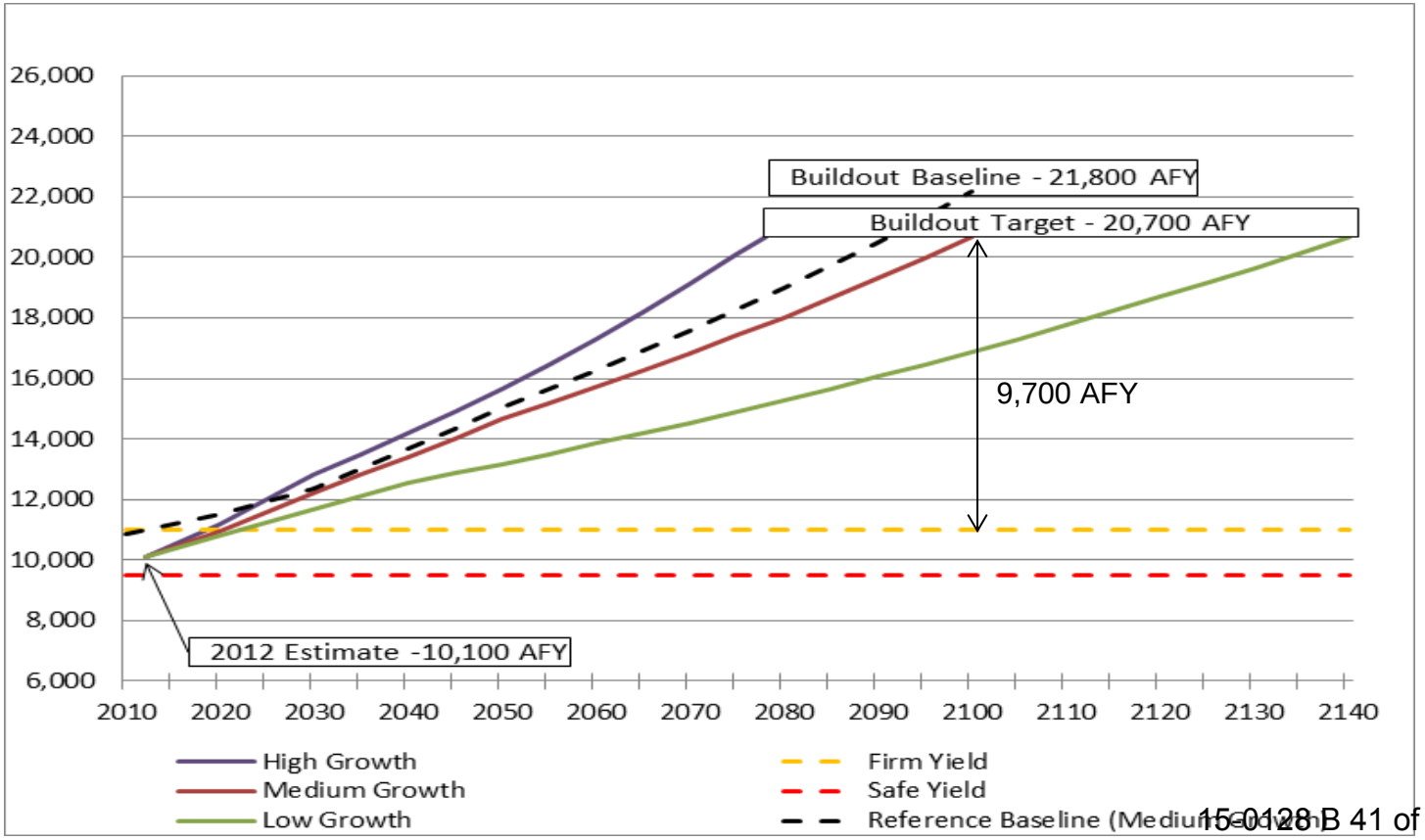
GDPUD Water Supply Need w/Conservation

	Existing Water Supply (ac-ft)	
	Firm Yield	Safe Yield
Supply	12,200	10,541
Demand w/ Conservation	19,930	19,930
Supply Need	(7,730)	(9,389)



GDPUD Water Supply Need - Climate Change Scenario

	Existing Water Supply (ac-ft)	
	Firm Yield	*Safe Yield*
Supply	10,980	9,487
Demand w/conservation	20,687	20,687
Supply Need	(9,707)	(11,200)



GDPUD - Closing the Gap

- American River Pump Station
  - Folsom Lake Water Supplies (PL 101-514)
    - 7,500 acre-feet USBR Water Service Contract
    - Dry year cutbacks up to 50%
    - Severe cold water pool impact limitations
    - Requires exchange w/upstream water rights holder
  - SMUD UARP – 10,000 acre-feet
    - Critical dry year cut backs at Whiterock
    - No cut backs at Folsom
    - Requires exchange w/upstream water rights holder

GDPUD - Closing the Gap

- Rubicon River Diversion
  - 10,300 acre-feet requiring reopener of El Dorado-SMUD Cooperation Agreement
  - Likely requires power foregone payments to SMUD
- Modification to allowable demand deficiency
  - 1,000 acre-feet increased firm yield
  - Alternative dry year demand deficiency

GDPUD - Closing the Gap

- Conveyance Canal Loss Reduction
  - 670 acre-feet from reduction conveyance losses
  - Part of plan to achieve 2020 conservation goal
- Additional water use efficiency
  - More aggressive pipeline replacements
  - Additional conservation beyond 2020 goal

GRIZZLY FLATS COMMUNITY SERVICES DISTRICT

GFCSD Demand Projections

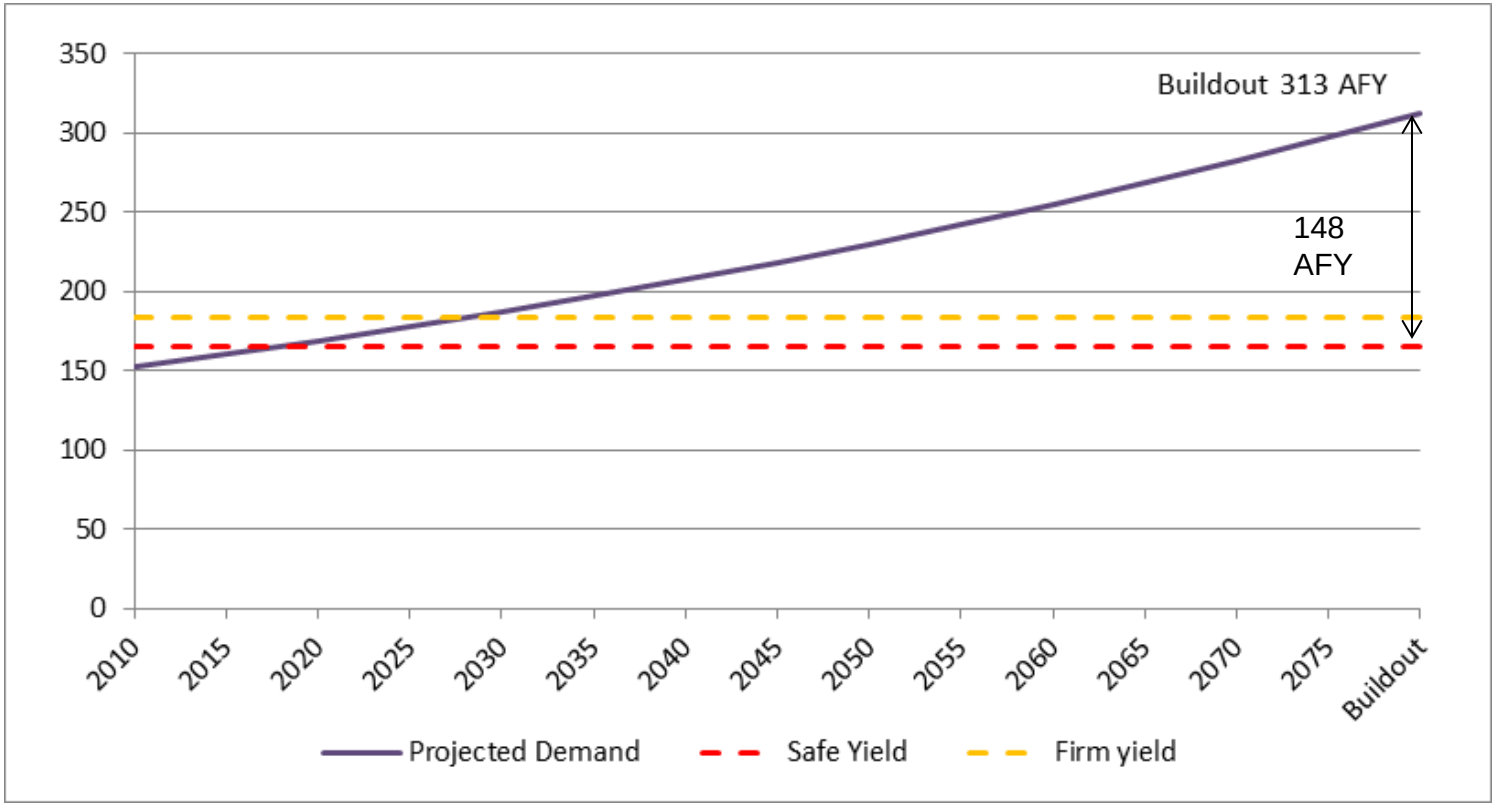
Grizzly Flats Community Services District Demand Projection (ac-ft)			
	Urban Demand		
	2010	2030	Buildout
Service Area	153	187	313

GFCSD Supply Assumptions

GFCSD Firm and Safe Yield Supply (ac-ft)	
	Yield
Safe Yield	165
Firm Yield	184
SOURCE: GFCSD (2012), Tables 8 and 10.	

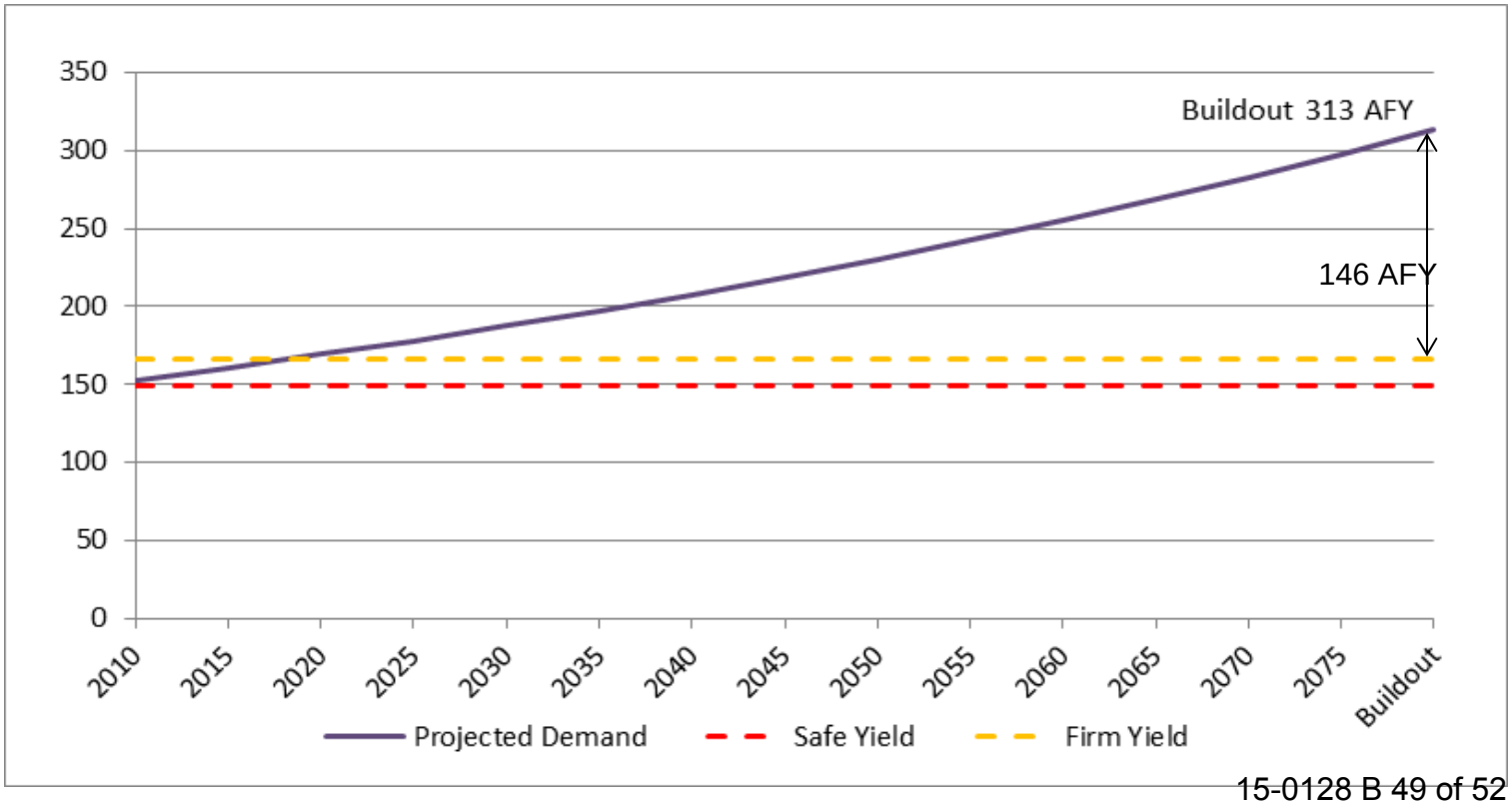
GFCSD Water Supply Need (ac-ft)

	Existing Water Supply	
	Firm Yield	*Safe Yield*
Supply	184	165
Demand	313	313
Supply Need	(129)	(148)



GFCSD Water Supply Need – Climate Change Scenario (ac-ft)

	Existing Water Supply	
	Firm Yield	*Safe Yield*
Supply	167	149
Demand	313	313
Supply Need	(146)	(164)



GFCSD - Closing the Gap

- Lincoln Hill Off-Stream Storage
  - 150 acre-feet reservoir
- Additional water use efficiency
  - More aggressive pipeline replacements
  - Additional water conservation

Conclusions

- Existing purveyor water supplies are adequate to meet near-term (15-20 years) demand under current firm yield policies
- New supplies are needed at buildout for all purveyors under firm and safe yield scenarios
- Potential climate change impacts could increase the need for new water supplies in the near term and at buildout

Questions