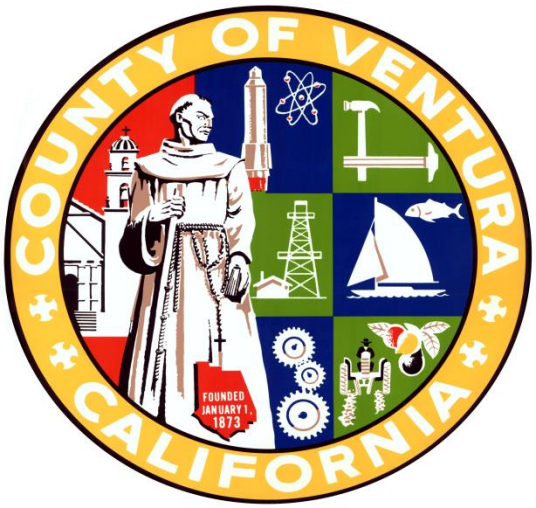
Ventura County Grand Jury
2016 - 2017



Final Report

WATER CONSIDERATIONS FOR CITIES

May 17, 2017

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WATER CONSIDERATIONS FOR CITIES

Summary

The 2016-2017 Ventura County Grand Jury (Grand Jury) investigated whether Ventura County (County) cities have adequately considered long-term water needs. This investigation examined existing urban water demand, future demand, and the potential sources of water.

California (State) recently endured a five year drought. While the statewide drought has eased, conditions in the County have not returned to normal. Several of the County reservoirs are significantly below capacity and there is no clear understanding of how recent rainfall will recharge the ground water basins. The occurrence and duration of the next drought is unpredictable.

The Grand Jury requested each of the 10 incorporated cities in the County provide information on how they would meet water needs and conservation targets through 2026. The cities (Cities) referred the Grand Jury to State mandated Urban Water Management Plans. The Grand Jury concluded the plans meet the minimum State requirements. However, the Grand Jury also concluded there is over reliance on imported water, requiring expensive and unfunded infrastructure changes. While the plans address the minimum state-required three-year drought scenarios, none of the plans address a longer drought. The current drought has lasted over five years. Catastrophic water shortages do not appear to have been given high priority in the Urban Water Management Plans.

The Grand Jury recommends the 10 city councils collaborate with all the County water purveyors to develop long term plans to respond to catastrophic disruptions of water supplies and droughts exceeding three years. The Grand Jury further recommends the 10 city councils ensure all future water availability plans clearly identify any potential water sources that are based on unfunded or unpermitted infrastructure.

Background

After years of extreme drought, Southern California is now free of the worst conditions after a deluge of rain in December, January and February. While the County has shaken off the extreme drought designation for the first time since 2013, the drought hasn't gone away. The County remains in a moderate drought category. Despite the improving conditions, many of the nearby reservoirs are still at less than 50% of capacity. (Ref-01, Ref-02)

California has experienced three periods of extreme drought in the last 100 years. Each of those episodes lasted at least four years. Ancient California mega-droughts have lasted over 200 years. Referring to the recent drought, California State

Climatologist Michael Anderson noted, "The funny thing about this weather pattern — it's about as unpredictable as you can get." (Ref-03, Ref-04)

While both urban development and agriculture are dependent on adequate supplies of water, this investigation focused on the relationship between water supplies and urban development in the County. Since the enactment of the Ventura County Guidelines for Orderly Development in 1969 (and subsequent actions including the Save Our Agricultural Resources [SOAR] measures), most future urban development in the County will happen in the incorporated Cities. In many cases, the water supplies needed to allow urban development are not controlled by the Cities. Instead, public and private water agencies provide the water and project both demand and supplies. This information is used by Cities to determine water availability. (Ref-05, Ref-06, Ref-07)

It is noted in the Casitas Mutual Water District's (CMWD) Urban Water Management Plan (UWMP) that, "…water agencies may need to mitigate and adapt to new strategies, which may require reevaluating existing agency missions, policies, regulations, facilities, funding priorities, and other responsibilities. There will be more competition for scarce water supplies between people and the environment. Resolving this conflict will be one of the biggest challenges confronting water agencies." (Ref-08)
The supplies, sources, and demands for water in the County are not uniform. The sources include:

- Wells pumping groundwater from aquifers
- Surface water
- Imported water
- Water from desalters and recycling

The State of California requires an UWMP be prepared and updated every five years by urban and wholesale water suppliers and retail water agencies. In some cases, a city's water supply will be addressed in several retail suppliers' UWMPs, as well as in several wholesale and retail providers' plans. The UWMPs include the following objectives:

- Describe the water systems
- Quantify anticipated water demands over a 20-year period
- Identify and quantify water resources over a 20-year period
- Summarize reliability of water resources for existing and future demands, in normal, dry, and multiple dry years, over a 20-year period
- Summarize water conservation and efficient water use programs

Cities project future land use and development based on demographic forecasts. Development plans are potentially constrained by the water availability identified in the UWMPs. (Ref-09)

Methodology

The Grand Jury requested that each of the 10 cities in the County provide information on how the Cities will ensure the availability and sustainability of water through 2026. This request asked each city to provide:

- The amount of water in acre feet (AF) available per year (by source/provider) to the city through 2026
- The amount of water required per year by the city to meet existing demand and provide for permitted and planned growth through 2026
- Water conservation plans and policies the city has enacted and any expected reductions in current demand
- Actions the city is taking to ensure compliance with water conservation measures
- Actions taken by the city which require water conservation or off-sets of water use for new development or redevelopment

The Grand Jury reviewed the Cities' state mandated UWMPs in addition to plans from wholesale and retail water providers.

The Grand Jury researched applicable state regulations and conducted extensive internet research on drought and water management.

Facts

FA-01. Providing water to the Cities is complicated. In many parts of the County, water is provided through imports from water wholesalers such as the Metropolitan Water District (MWD), Calleguas Municipal Water District (Calleguas), and the United Water Conservation District (UWCD). In other cases, water is obtained through local supplies, including ground water, runoff stored in reservoirs, and recycling. (Ref-08, Ref-10, Ref-11, Ref-12, Ref-13, Ref-14, Ref-15, Ref-16, Ref-17, Ref-18, Ref-19, Ref-20, Ref-21)

FA-02. Projected water demand in the wholesale agency reports is based on population projections from a number of sources including:

- Southern California Association of Governments (SCAG)
- California Department of Finance
- U.S. Census
- Ventura Council of Governments (VCOG)/County Planning

(Ref-22, Ref-23, Ref-24, Ref-25)

FA-03. Without a significant increase in the amount of available water, MWD projects by 2040, there will be water restrictions in eight out of every 10 years. Without significant conservation, annual retail water demand within MWD will outstrip resources by approximately 1.3 million AF or 22%. (Ref-29)

FA-04. All but one of the Cities and all of the water suppliers have submitted 2015 UWMPs to the State for approval. These plans indicate:

- There are sufficient water supplies for the long term. In some cases, this is based on anticipated increases in imported water. In other cases, it is based on having historical average supplies of surface water, groundwater, and the development of new water sources including recycling and desalting facilities. The increased importation of water is reliant on new infrastructure which has neither been approved nor funded.
- Most of the Cities are predicting increased supply in excess of future demand.
- All of the Cities have adopted drought regulations and enforcement measures for short-term drought.
- The Cities' plans do not quantify the impact of individual conservation measures. They do consider savings due to changes in household plumbing fixtures and outdoor water use.

(Ref-08, Ref 10, Ref 11, Ref 12, Ref 13, Ref 14, Ref 15, Ref 16, Ref 17, Ref 18, Ref 19, Ref 20, Ref 21, Ref 26, Ref-27, Ref-28, Ref 30, Ref-31)

FA-05. The Cities all complied with the minimum State requirements for water conservation to address the recent drought. When drought conditions ease, some Cities may choose to ease water use restrictions. (Ref-32, Ref-33, Ref-34, Ref-35)

FA-06. All of the Cities' UWMPs predict having sufficient water to serve the 2035 or 2040 estimated population. These predictions do not include any consideration of a water constrained future of frequent and extensive periods of drought. (Ref-08, Ref-10, Ref-11, Ref-12, Ref-13, Ref-14, Ref-15, Ref-16, Ref-17, Ref-18, Ref-20, Ref-21)

FA-07. The Cities' UWMPs have complied with a State mandate requiring the prediction of water availability in the event of droughts lasting at least three years. Water providers' projections may exceed the State minimum and consider droughts longer than three years. However, none of the Cities' UWMPs exceed the minimum requirement. The recent drought lasted more than five years. (Ref-08, Ref-10, Ref-11, Ref-12, Ref-13, Ref-14, Ref-15, Ref-16, Ref-17, Ref-18, Ref-20, Ref-21)

FA-08. With limited exceptions, urban growth will take place inside the Cities and not in the unincorporated areas of the County. This is due to the combination of long standing County policies based on the 1969 Ventura County Guidelines for Orderly Development, greenbelt agreements, and the SOAR measures. (Ref-05, Ref-06, Ref-07)

FA-09. The City of San Buenaventura's plan to annex land for development was turned down by the Local Agency Formation Commission (LAFCo) in February, 2017, due to inadequate future supplies of water. On April 20, 2017, LAFCo revised its decision to allow for the annexation dependent on

Ventura Water providing a letter of proof that the city has enough water. (Ref-36)

FA-10. Most of the Cities' UWMPs provide a cursory plan to address catastrophic failures or long-term interruptions within the system. These include infrastructure failures, damage to the groundwater caused by saltwater intrusion, or other environmental disasters. The Cities' UWMPs typically state conservation measures will be instituted in the case of long term disruptions. Two water wholesalers, Calleguas and MWD, address catastrophic events in their UWMPs, primarily by identifying stored sources of water. Both Calleguas and MWD's plans anticipate a 25% reduction in water supplies in the event of disaster. (Ref-08, Ref-10, Ref-11, Ref-12, Ref-13, Ref-14, Ref-15, Ref-16, Ref-17, Ref-18, Ref-19, Ref-20, Ref-21, Ref-26, Ref-27, Ref-28, Ref-30, Ref-31)

FA-11. The State of California Bay-Delta Authority and the California Department of Water Resources' worst-case scenario projects water imports from the State Water Project (via the Sacramento Delta) could be unavailable for a year. (Ref-37)

FA-12. Calleguas delivers water to about 75% of the County. Three quarters of Calleguas' water comes from Northern California through the State Water Project aqueduct. If an earthquake were to damage the aqueduct, Calleguas would run out of water in about a month. Authorities state an earthquake cutting off the aqueduct isn't a question of "if"; it's a question of "when". (Ref-38)

FA-13. Building water purification facilities, desalination plants, desalters, recycling plants, additional pipelines, and storage facilities are expensive capital projects. The costs will be paid for by the current and future ratepayers. For example, seawater desalination costs more than twice as much as importing water into the County. (Ref-39, Ref-40)

FA-14. The source of imported water for Ventura County is precipitation, primarily from the Sierra snowpack and rainfall in the Colorado River Basin. Over the last 100 years, the amount of precipitation in parts of the Sierra has steadily declined. The snowpack is also reduced by rising temperatures in California over the last century. (Ref-41, Ref-42, Ref-43, Ref-44, Att-02, Att-03)

FA-15. Since 1912, the average temperature in the State has increased by .06 degrees Fahrenheit per decade. This warming trend contributes to increased amounts of precipitation falling as rain, not snow, in the Northern Sierra. The State Water Project, which provides much of the water used in the County, depends upon precipitation falling as snow instead of rain. Most Sierra rainfall is not captured and thus not available for public use. (Ref-42, Ref-43) (Att-02, Att-03)

FA-16. The City of Santa Paula has not complied with the State requirement to submit its 2015 UWMP by the deadline of July 1, 2016. On October 27, 2016 the State sent the City a letter regarding the non-submittal of its UWMP. A complete draft had not been accepted by the State for review as

of April 13, 2017. Failure to comply threatens the City's eligibility for future State grants or loans. (Ref-45, Ref-46)

Conclusions

C-01. Cities' water plans are based on historic water availability patterns which may no longer be applicable. Over the last 100 years, water availability from precipitation has been trending downward and may never return to what was considered average. (FA-04, FA-06, FA-14, FA-15)

C-02. Cities' plans address the minimum, state-required, three-year drought scenarios. None of the UWMPs address a long term drought, even though the current drought has lasted over five years. (FA-04, FA-05, FA-06, FA-07)

C-03. Long term city plans are based on the optimistic view there will be as much water available in 2035 or 2040, as there was in 2010. Additional future water resources are not well-defined other than being described as imported water or coming from recycling and conservation efforts. (FA-01, FA-04, FA-06, FA-09)

C-04. Current and future ratepayers will bear the burden of the cost of building water purification facilities, desalination plants, desalters, recycling plants, additional pipelines, and storage facilities needed to ensure there is an adequate water supply system in the future. (FA-04, FA-13)

C-05. Since many of the cities in the County rely on MWD wholesale water, Cities should base UWMPs on the wholesalers' prediction that retail water demand will outstrip total reliable water resources by 2040. (FA-03)

C-06. The UWMPs use different sources for analyzing past and future populations. The inconsistency makes it difficult to compare plans, especially when cities have multiple retail water providers. Some UWMPs even use different population sources within the same report. (FA-02, FA-08)

C-07. Cities' water plans do not appear to adequately address catastrophic failures or interruptions within the system, such as:

- infrastructure failures (dams)
- major earthquake destruction
- damage to the groundwater
    - saltwater intrusion
    - environmental disasters (oil or chemical spills)

(FA-10, FA-11, FA-12)

C-08. The City of Santa Paula has been out of compliance with State law for nine months by failing to submit a 2015 UWMP, threatening access to future State funding. (FA-16)

Recommendations

R-01. The Grand Jury recommends the 10 city councils collaborate with all the County water purveyors to develop long term plans to respond to catastrophic disruptions of water supplies. (C-07)

R-02. The Grand Jury recommends the 10 city councils use the same data source when making population projections. (C-06)

R-03. The Grand Jury recommends the 10 city councils develop drought plans that extend at least 5 years. (C-02)

R-04. The Grand Jury recommends the 10 city councils extend drought conservation measures during non-drought years. (C-01, C-03, C-05)

R-05. The Grand Jury recommends the 10 city councils ensure all future water availability plans clearly identify any potential water sources that are based on unfunded or unpermitted infrastructure. (C-03, C-04, C-05)

R-06. The Grand Jury recommends the Santa Paula City Council direct staff to comply with State requirements for submission of the 2015 UWMP. (C-08)

Responses

Responses Required From:

City Council, City of Camarillo (C-01, C-02, C-03, C-04, C-05, C-06, C-07, R-01, R-02, R-03, R-04, R-05)

City Council, City of Fillmore (C-01, C-02, C-03, C-04, C-05, C-06, C-07, R-01, R-02, R-03, R-04, R-05)

City Council, City of Moorpark (C-01, C-02, C-03, C-04, C-05, C-06, C-07, R-01, R-02, R-03, R-04, R-05)

City Council, City of Ojai (C-01, C-02, C-03, C-04, C-05, C-06, C-07, R-01, R-02, R-03, R-04, R-05)

City Council, City of Oxnard (C-01, C-02, C-03, C-04, C-05, C-06, C-07, R-01, R-02, R-03, R-04, R-05)

City Council, City of Port Hueneme (C-01, C-02, C-03, C-04, C-05, C-06, C-07, R-01, R-02, R-03, R-04, R-05)

City Council, City of San Buenaventura (C-01, C-02, C-03, C-04, C-05, C-06, C-07, R-01, R-02, R-03, R-04, R-05)

City Council, City of Santa Paula (C-01, C-02, C-03, C-04, C-05, C-06, C-07, C-08, R-01, R-02, R-03, R-04, R-05, R-06)

City Council, City of Simi Valley (C-01, C-02, C-03, C-04, C-05, C-06, C-07, R-01, R-02, R-03, R-04, R-05)

City Council, City of Thousand Oaks (C-01, C-02, C-03, C-04, C-05, C-06, C-07, R-01, R-02, R-03, R-04, R-05)

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Attachments

Att-01. SCAG Demographics and Growth Forecast – December 2015
Att-02. Northern California Sample Precipitation Trends: Susanville 1896-2016 and Mammoth Lakes 1995-2017; Applied Climate Information System. NOAA Regional Climate Centers
Att-03. NOAA National Centers for Environmental Information, Climate at a Glance, California Average Temperature, 1896-2017

Glossary

TERM	DEFINITION
Acre Foot	A foot of water covering one acre or 325,990 gallons of water. A typical California household uses approximately one half of an acre-foot annually.
Cities	Incorporated cities in Ventura County
County	County of Ventura
Calleguas	Calleguas Municipal Water District
CMWD	Casitas Mutual Water District
Desalination	The process of converting ocean water into potable water
Desalter	A facility for removing minerals, including salt, from groundwater to make the water usable, although not necessarily potable
Drought	National Weather Service uses Palmer Drought Severity Index to provide information about drought severity. The Palmer Drought Severity Index combines temperature, precipitation, evaporation, transpiration, soil runoff and soil recharge data for a given region to produce a single negative number that indicates drought conditions. This index serves as an estimate of soil moisture deficiency and roughly correlates with drought severity.
- Normal	0 and minus 1 indicate non-drought conditions
- Moderate	minus 2 is moderate drought
- Severe	minus 3 is severe drought
- Extreme	minus 4 is extreme drought

- Exceptional	minus 5 or greater is an exceptional drought
DWR	California State Department of Water Resources
Grand Jury	2016-2017 Ventura County Grand Jury
Imported water	Water transported from a water basin or watershed via pipeline or aqueduct
Mega-drought	A drought lasting over 200 years
MWD	Metropolitan Water District of Southern California
NOAA	National Oceanic and Atmospheric Administration
Potable Water	Drinkable water
SCAG	Southern California Association of Governments
UWCD	United Water Conservation District
UWMP	Urban Water Management Plan
VCWD	Ventura County Waterworks District

Disclaimer

This report is issued by the 2016-2017 Ventura County Grand Jury. Due to a potential conflict of interest, a member of this Grand Jury was excused from participating in any aspect of the production of this report.

Attachment 01

SCAG Demographics and Growth Forecast – December 2015

SCAG DEMOGRAPHICS AND GROWTH FORECAST - December 2015

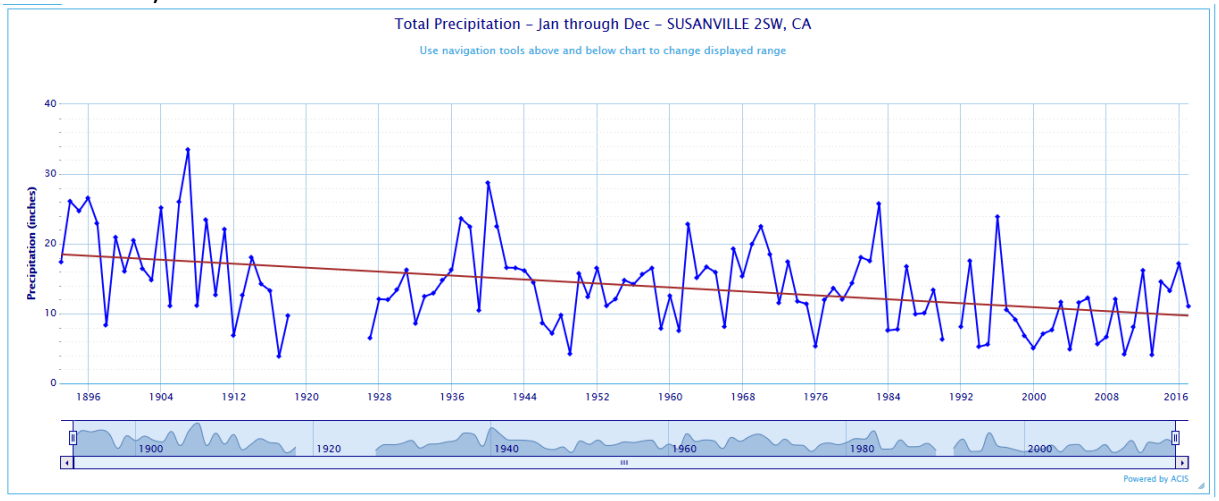
Agency	2010 Population	2040 Population	Change	% Change
Camarillo	66,300	79,900	13,600	20.5%
Fillmore	18,800	21,800	3,000	16.0%
Moorpark	34,800	43,000	8,200	23.6%
Ojai	7,500	8,400	900	12.0%
Oxnard	200,100	237,300	37,200	18.6%
Port Hueneme	21,800	22,400	600	2.8%
San Buenaventura	106,700	125,300	18,600	17.4%
Santa Paula	29,800	39,600	9,800	32.9%
Simi Valley	125,100	142,400	17,300	13.8%
Thousand Oaks	127,800	131,700	3,900	3.1%
Unincorporated	96,700	113,600	16,900	17.5%

Attachment 02

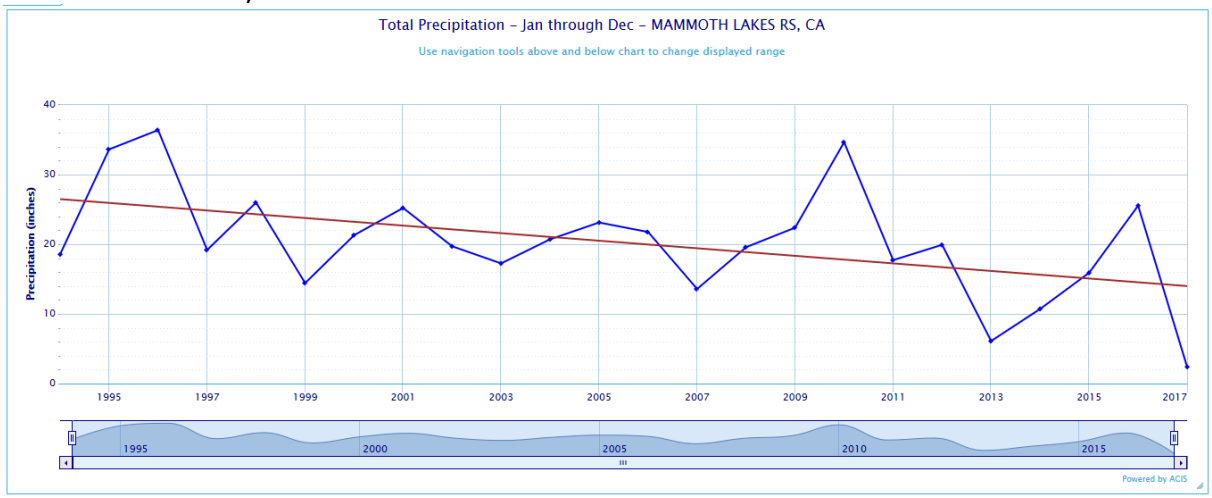
Northern California Sample Precipitation Trends: Susanville 1896-2016 and Mammoth Lakes 1995-2017

Sierra Precipitation

Susanville, CA 1896-2016



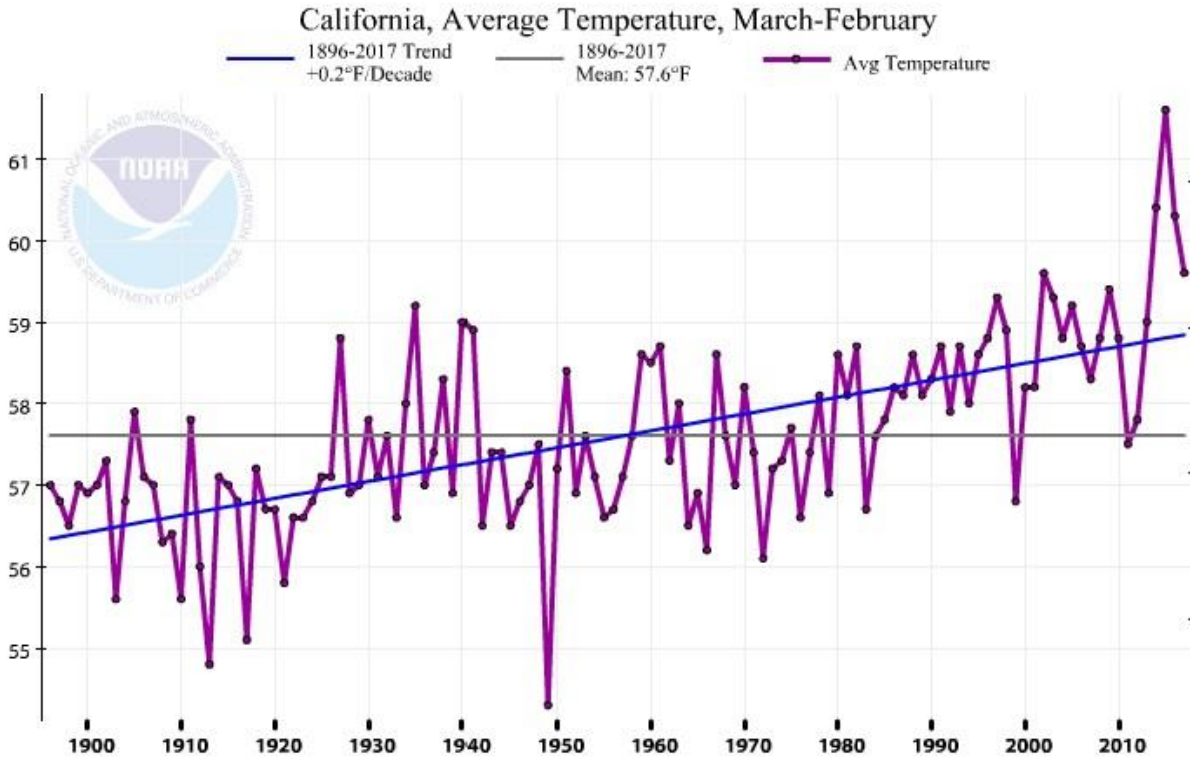
Mammoth Lakes, CA 1995-2017



SOURCE: Applied Climate Information System. NOAA Regional Climate Centers

Attachment 03

NOAA National Centers for Environmental Information, Climate at a Glance, California Average Temperature, 1896-2017


California, Average Temperature, March-February
1896-2017 Trend
+0.2°F/Decade
1896-2017
Mean: 57.6°F
Avg Temperature
61
60
59
58
57
56
55
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010

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