Interactive Legislative Districts Layers

Updated interactive legislative districts layers for the Drinking Water Tool (2024). Data processed and joined by Ari Libenson, Water Equity Science Shop, UC Berkeley
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File names: congressional_final_040425.shp; assembly_final_040425.shp; senate_final_040425.shp

Spatial Reference

Geographic Coordinate System	NAD 1983	Projected Coordinate System	NAD 1983 (Teale) Albers (Meters)
WKID	4269	Projection	3310
Authority	EPSG	Authority	EPSG
Angular Unit	Degree (0.0174532925199433)	Linear Unit	Meters (1.0)
Prime Meridian	Greenwich (0.0)	False Easting	0.00
Datum	D North American 1983	False Northing	-4000000.0
Spheroid	GRS 1980	Central Meridian	-120.0
Semimajor Axis	6378137.0	Standard Parallel 1	34.0
Semiminor Axis	6356752.314140356	Standard Parallel 2	40.5
Inverse Flattening	298.257222101	Latitude of Origin	0.0

Description

These three shapefiles contain polygons that represent the boundaries of the 80 State Assembly, 40 State Senate, and 52 Congressional Districts in California. Legislative district boundaries were downloaded on November 1, 2023, from the California State Geoportal (CA.gov). To estimate a count of each entity per district, the following fields were spatially joined to the legislative districts: domestic wells locations, Groundwater Sustainability Agencies, public supply well locations, water system boundaries, severely disadvantaged and disadvantaged census places, drinking water threats, results for the Central Valley Drought Analysis, and drinking water affordability data.

Methods

Updating legislative district layer attributes

- Performed a pairwise intersection to identify overlaps between water system boundaries[1] and district polygons[2]
    a. Slivers were identified and excluded.
        i. **Note:** Slivers are erroneous polygons that occur when two layers intersect but their boundaries don't align perfectly, creating gaps. We estimated that slivers should be defined as any area equal to or less than 0.3% of the total water system's area (km²) for State Assembly districts, 0.6% for US Congressional

districts, and 1% for State Senate districts. These thresholds were based on visual inspection of the data and varied between geographies.

    b. Dissolved by district ID and calculated the sum of systems per district.

- Calculated population served by water systems[1] for each district.
    a. Used geoprocessing tool “make feature layer” and selected the option for “use ratio policy” for population field.
    b. Intersected layer with district boundaries.
    c. Dissolved by district ID and calculated sum of population.
- Spatially joined domestic well points[3] to district polygons, using the “Completely Contained” argument.
    a. Created a new field, DomWells, populated with the count of wells per district.
    b. Selected all domestic wells with completed depth > 0 ft. Used summarize within function to calculate average and standard deviation of completed well depth.
- Calculated population served by domestic wells[3] for each district.
    a. Used geoprocessing tool “make feature layer” and selected the option for “use ratio policy” for population field.
    b. Intersected layer with district boundaries.
    c. Dissolved by district ID and calculated sum of population.
- Spatially joined Groundwater Sustainability Agency (GSA) boundaries[4] to district polygons, using the Intersect argument.
    a. Created a new field, Num_GSA, populated with the count of GSAs per district.
- Spatially joined public supply wells[5] to district polygons in ArcGIS Pro, using the "Completely Contained" argument.
    a. Created a new field, Num_MunPub, populated with the sum of wells per district.
- Calculated number of disadvantaged communities (DAC) and severely disadvantaged communities (SDAC) census designated places[6] in each district.
    a. Intersected 2021 census designated places and district boundaries.
    b. Selected by DAC and calculated the count of intersections per district.
    c. Selected by SDAC and calculated the count of intersections per district.
- Merged drinking water threat polygons representing superfund sites;[7] military installations, ranges, and training areas;[8] and airports permitted to use aqueous film-forming foam (AFFF)[9] into a single shapefile.
    a. Removed duplicates, dummy coded polygons based on which dataset (or combination of datasets) it came from.
    b. We categorized facilities based on site type(s) to avoid overcounting facilities with overlapping polygons. For example if a superfund (SRP) site polygon overlapped with a military (MIRTA) site polygon, this was categorized as 1 facility that was cross-listed as a SRP/MIRTA site. Categories were exclusive, meaning that an SRP/MIRTA facility was not also categorized as SRP and MIRTA.
    c. Intersected polygons with districts and added the number of each type of facility by district.

- Spatially joined with point data for the following drinking water threats layers:
    a. Drinking water wells with PFAS detections,[10] wastewater treatment facilities,[11] landfills,[11] refineries and terminals,[11] chrome plating facilities,[11] active oil and gas wells.[12]
    b. Used the geoprocessing tool "summarize within" function to count the number of each threat by district.
    c. Calculated the percent of drinking water wells that had at least one sample that exceeded the detection limit.
    d. Calculated the percent of drinking water wells that had at least one sample that exceeded one or more PFAS maximum contaminant level (MCL).
- Calculated total pesticide application[13] (pounds) for each district, 2011-2019.
    a. Used geoprocessing tool "make feature layer" and selected the option for "use ratio policy" for pesticide sum.
    b. Intersected layer with district boundaries.
    c. Dissolved by district ID and calculated sum of pesticides.
- Joined district contact information.[14,15,16]
- Spatially joined the Sustainable Management Criteria (SMC) Drought Analysis[17] results to district polygons, using the "Completely Contained" argument.
        i. Calculated the count of domestic wells included in the drought analysis.
        ii. Calculated the count of domestic wells fully dewatered and partially dewatered under both the Measurable Objective and Minimum Threshold conditions.
        iii. Calculated the percent of domestic wells fully dewatered and partially dewatered under both the Measurable Objective and Minimum Threshold conditions.
- Spatially joined Water System Affordability data[18] to counties using the pairwise intersect and pairwise dissolve functions.
    a. Performed a pairwise intersection to identify overlaps between water system boundaries and counties.
        i. Slivers were identified and excluded.
            1. **Note:** Slivers are erroneous polygons that occur when two layers intersect but their boundaries don't align perfectly, creating gaps. We estimated that slivers should be defined as any area equal to or less than 0.3% of the total water system's area (km^2) for State Assembly districts, 0.6% for US Congressional districts, and 1% for State Senate districts. These thresholds were based on visual inspection of the data and varied between geographies.
    b. Dissolved by district ID
        i. Calculated the sum of systems assessed for: affordability, percent median household income (%MHI), extreme water bill, and household socioeconomic burden.

ii. Calculated the sum of systems that have a high affordability burden and thresholds exceeded for %MHI, extreme water bill, and household socioeconomic burden.
iii. Calculated the percent of systems assessed that have a high affordability burden and thresholds exceeded for %MHI, extreme water bill, and household socioeconomic burden.

Attribute Table 1: Congressional Districts

Field Heading	Field type	Field Description	Source
OBJECTID_12	Object ID	Object ID	ESRI generated
Shape	Geometry	Polygon	ESRI generated
GEOID	Text	Geographic identifier	U.S. Census Bureau
CongDistri	Text	Congressional District	CA.gov
CongDist_1	Text	Congressional District Identifier	CA.gov
CongAreaSq	Double	District area	Ca.gov
Member	Text	Member name	house.gov
Party	Text	Party affiliation (R)= Republican (D) =Democrat	house.gov
Website	Text	Hyperlink to congressional district website	house.gov
Office Room	Text	Office room number	house.gov
Phone	Text	Member phone number	house.gov
Committee	Text	Committee that member belongs to	house.gov

Assignment			
WS_count	Float	Count of water systems	WESS
CWS_pop_fi	Double	Population served by water systems	WESS
DomWells	Float	Count of domestic wells	WESS
Av_depth	Double	Average total completed depth of domestic wells (ft)	WESS
SD_depth	Double	Standard deviation of total completed depth for domestic wells (ft)	WESS
DWA_pop_To	Double	Population served by domestic wells	WESS
Num_GSA	Float	Number of Groundwater Sustainability Agency (GSA) boundaries that fall within the boundary of a Congressional District	WESS
Num_MunPub	Float	Count of municipal public supply wells	WESS
Num_DAC	Float	Count of Disadvantaged Communities	WESS
Num_SDAC	Float	Count of Severely Disadvantaged Communities	WESS
SRP	Float	Count of Superfund Sites	WESS
MIRTA	Float	Count of Military Installations, Ranges and Training Areas (MIRTA)	WESS

P139	Float	Count of airports permitted to use aqueous film-forming foam (contains PFAS)	WESS
MIRTA_SPR	Float	Count of sites listed as both a MIRTA and Superfund Site (SRP)	WESS
SRP_P139	Float	Count of sites listed as both a Superfund Site and P-139 Airport.	WESS
SRP_MIRTA_P139	Float	Count of sites listed as a MIRTA, Superfund Site, and P-139 Airport	WESS
Num_OG	Float	Count of active oil and gas wells	WESS
ChromePlat	Float	Count of chrome-plating facilities	WESS
Landfills	Float	Count of landfills	WESS
RefsTerms	Float	Count of refineries and bulk terminals	WESS
WWTFs	Float	Count of wastewater treatment facilities (WWTFs)	WESS
Excd_MCL	Float	Count of wells with at least one water sample with PFAS measured above any EPA Maximum Contaminant Level (MCL)	WESS
Excd_DL	Float	Count of wells with at least one water sample with PFAS measured above the detection limit but below any EPA Maximum Contaminant Level	WESS

		(MCL)	
n_PFAS_sam	Float	Count of wells that were sampled and tested for PFAS.	WESS
p_excd_MCL	Float	Percent of wells sampled with at least one water sample with PFAS measured above any EPA MCL.	WESS
p_excd_DL	Float	Percent of wells sampled with at least one water sample with PFAS detected above the detection limit but below any EPA MCL.	WESS
Total_pest	Double	Total pounds of pesticide active ingredients applied in domestic well areas between 2011-2019	WESS
MT_fully	Float	Count of fully dewatered domestic wells based on the Minimum Threshold (MT) groundwater level.	EKI
MT_partial	Float	Count of partially dewatered domestic wells based on the MT groundwater level.	EKI
MO_fully	Float	Count of fully dewatered domestic wells based on the Measurable Objective (MO) groundwater level.	EKI
MO_partial	Float	Count of partially dewatered domestic wells based on the MO groundwater level.	EKI
n_wells_sm	Float	Total number of domestic wells included in the Sustainable Management Criteria (SMC) drought analysis.	EKI
p_mt_full	Float	Percent of fully dewatered wells based on the MT groundwater level. Denominator is the total number of domestic wells included in the SMC drought analysis.	EKI

p_mt_part	Float	Percent of partially dewatered wells based on the MT groundwater level. Denominator is the total number of domestic wells included in the SMC drought analysis.	EKI
p_mo_full	Float	Percent of fully dewatered wells based on the MO groundwater level. Denominator is the total number of domestic wells included in the SMC drought analysis.	EKI
p_mo_part	Float	Percent of partially dewatered wells based on the MO groundwater level. Denominator is the total number of domestic wells included in the SMC drought analysis.	EKI
afford_hig	Double	Count of water systems located partially or fully within district boundaries with a high affordability burden, based on the SWRCB's 2024 Affordability Assessment.	SWRCB
pMHI_yes	Double	Count of water systems located partially or fully within district boundaries that exceeded the threshold for percent Median Household Income (MHI), based on the SWRCB's 2024 Affordability Assessment.	SWRCB
EWB_yes	Double	Count of water systems located partially or fully within district boundaries that exceeded the threshold for extreme water bill, based on the SWRCB's 2024 Affordability Assessment.	SWRCB
hseSES_yes	Double	Count of water systems located partially or fully within district boundaries that exceeded the threshold for household socioeconomic burden, based on the SWRCB's 2024 Affordability Assessment.	SWRCB
n_ws_affor	Long	Count of water systems that were included in the affordability assessment and assigned an affordability burden.	SWRCB
n_ws_pMHI	Long	Count of water systems that were included in the affordability assessment and evaluated for the percent MHI indicator.	SWRCB

n_ws_EWB	Long	Count of water systems that were included in the affordability assessment and evaluated for the extreme water bill indicator.	SWRCB
n_ws_hseSE	Long	Count of water systems that were included in the affordability assessment and evaluated for the household socioeconomic burden indicator.	SWRCB
p_afford_h	Float	Percent of water systems with a high affordability burden. Denominator is the count of water systems included in the assessment.	SWRCB
p_pmhi	Float	Percent of water systems that exceeded the threshold for percent MHI. Denominator is the count of water systems evaluated for percent MHI.	SWRCB
p_ewb	Float	Percent of water systems that exceeded the threshold for extreme water bill. Denominator is the count of water systems evaluated for extreme water bill.	SWRCB
p_hseSES	Float	Percent of water systems that exceeded the threshold for household socioeconomic burden. Denominator is the count of water systems evaluated for household socioeconomic burden.	SWRCB

Attribute Table 2: State Assembly Districts

Field Heading	Field type	Field Description	Source
OBJECTID_1	Object ID	Object ID	ESRI generated
Shape	Geometry	Polygon	ESRI generated
GEOID	Text	Geographic identifier	U.S. Census Bureau
AssemblyDi	Text	Assembly District	CA.gov
Assembly_1	Text	Assembly District Identifier	CA.gov
AssemblyAr	Double	District area	Ca.gov

Party	Text	Assembly district and party (R)= Republican (D) =Democrat	Senate Office of Demographics
Member	Text	Member name	Senate Office of Demographics
Phone	Text	Member phone number	Senate Office of Demographics
Website	Text	Hyperlink to senate district website	Senate Office of Demographics
WS_count	Float	Count of water systems	WESS
CWS_pop_fi	Double	Population served by water systems	WESS
DomWells	Float	Count of domestic wells	WESS
Av_depth	Double	Average total completed depth of domestic wells (ft)	WESS
SD_depth	Double	Standard deviation of total completed depth for domestic wells (ft)	WESS
DWA_pop_To	Double	Population served by domestic wells	WESS
Num_GSA	Float	Number of Groundwater Sustainability Agency (GSA) boundaries that fall within the boundary of a State Assembly District	WESS

Num_MunPub	Float	Count of municipal public supply wells	WESS
Num_DAC	Float	Count of Disadvantaged Communities	WESS
Num_SDAC	Float	Count of Severely Disadvantaged Communities	WESS
SRP	Float	Count of Superfund Sites	WESS
MIRTA	Float	Count of Military Installations, Ranges and Training Areas (MIRTA)	WESS
P139	Float	Count of airports permitted to use aqueous film-forming foam (contains PFAS)	WESS
MIRTA_SPR	Float	Count of sites listed as both a MIRTA and Superfund Site (SRP)	WESS
SRP_P139	Float	Count of sites listed as both a Superfund Site and P-139 Airport.	WESS
SRP_MIRTA_P139	Float	Count of sites listed as a MIRTA, Superfund Site, and P-139 Airport	WESS
Num_OG	Float	Count of active oil and gas wells	WESS
ChromePlat	Float	Count of chrome-plating facilities	WESS

Landfills	Float	Count of landfills	WESS
RefsTerms	Float	Count of refineries and bulk terminals	WESS
WWTFs	Float	Count of wastewater treatment facilities (WWTFs)	WESS
Excd_MCL	Float	Count of wells with at least one water sample with PFAS measured above any EPA Maximum Contaminant Level (MCL)	WESS
Excd_DL	Float	Count of wells with at least one water sample with PFAS measured above the detection limit but below any EPA Maximum Contaminant Level (MCL)	WESS
n_PFAS_sam	Float	Count of wells that were sampled and tested for PFAS.	WESS
p_excd_MCL	Float	Percent of wells sampled with at least one water sample with PFAS measured above any EPA MCL.	WESS
p_excd_DL	Float	Percent of wells sampled with at least one water sample with PFAS detected above the detection limit but below any EPA MCL.	WESS
Total_pest	Double	Total pounds of pesticide active ingredients applied in domestic well areas between 2011-2019	WESS
MT_fully	Float	Count of fully dewatered domestic wells based on the Minimum Threshold (MT) groundwater level.	EKI

MT_partial	Float	Count of partially dewatered domestic wells based on the MT groundwater level.	EKI
MO_fully	Float	Count of fully dewatered domestic wells based on the Measurable Objective (MO) groundwater level.	EKI
MO_partial	Float	Count of partially dewatered domestic wells based on the MO groundwater level.	EKI
n_wells_sm	Float	Total number of domestic wells included in the Sustainable Management Criteria (SMC) drought analysis.	EKI
p_mt_full	Float	Percent of fully dewatered wells based on the MT groundwater level. Denominator is the total number of domestic wells included in the SMC drought analysis.	EKI
p_mt_part	Float	Percent of partially dewatered wells based on the MT groundwater level. Denominator is the total number of domestic wells included in the SMC drought analysis.	EKI
p_mo_full	Float	Percent of fully dewatered wells based on the MO groundwater level. Denominator is the total number of domestic wells included in the SMC drought analysis.	EKI
p_mo_part	Float	Percent of partially dewatered wells based on the MO groundwater level. Denominator is the total number of domestic wells included in the SMC drought analysis.	EKI
afford_hig	Double	Count of water systems located partially or fully within district boundaries with a high affordability burden, based on the SWRCB's 2024 Affordability Assessment.	SWRCB
pMHI_yes	Double	Count of water systems located partially or fully within district boundaries that exceeded the threshold for percent Median Household Income (MHI), based on the SWRCB's 2024 Affordability Assessment.	SWRCB

EWB_yes	Double	Count of water systems located partially or fully within district boundaries that exceeded the threshold for extreme water bill, based on the SWRCB's 2024 Affordability Assessment.	SWRCB
hseSES_yes	Double	Count of water systems located partially or fully within district boundaries that exceeded the threshold for household socioeconomic burden, based on the SWRCB's 2024 Affordability Assessment.	SWRCB
n_ws_affor	Long	Count of water systems that were included in the affordability assessment and assigned an affordability burden.	SWRCB
n_ws_pMHI	Long	Count of water systems that were included in the affordability assessment and evaluated for the percent MHI indicator.	SWRCB
n_ws_EWB	Long	Count of water systems that were included in the affordability assessment and evaluated for the extreme water bill indicator.	SWRCB
n_ws_hseSE	Long	Count of water systems that were included in the affordability assessment and evaluated for the household socioeconomic burden indicator.	SWRCB
p_afford_h	Float	Percent of water systems with a high affordability burden. Denominator is the count of water systems included in the assessment.	SWRCB
p_pmhi	Float	Percent of water systems that exceeded the threshold for percent MHI. Denominator is the count of water systems evaluated for percent MHI.	SWRCB
p_ewb	Float	Percent of water systems that exceeded the threshold for extreme water bill. Denominator is the count of water systems evaluated for extreme water bill.	SWRCB
p_hseSES	Float	Percent of water systems that exceeded the threshold for household socioeconomic burden. Denominator is the count of water systems evaluated for household socioeconomic burden.	SWRCB

Attribute Table 3: State Senate Districts

Field Heading	Field type	Field Description	Source
OBJECTID_1	Object ID	Object ID	ESRI generated
Shape	Geometry	Polygon	ESRI generated
GEOID	Text	Geographic identifier	U.S. Census Bureau
SenateDist	Text	Senate District	CA.gov
SenateDi_1	Text	Senate District Identifier	CA.gov
SenateArea	Double	District area	Ca.gov
Senate_Mem	Text	Name of the senate member	Senate Office of Demographics
Party	Text	Party affiliation (R) = Republican (D) = Democrat	Senate Office of Demographics
SD_Web_Page	Text	Hyperlink to senate district website	Senate Office of Demographics
Phone	Text	Phone number of senate member	Senate Office of Demographics
WS_count	Float	Count of water systems	WESS
CWS_pop_fi	Double	Population served by water systems	WESS
DomWells	Float	Count of domestic wells	WESS
Av_depth	Double	Average total completed depth of domestic wells	WESS

		(ft)	
SD_depth	Double	Standard deviation of total completed depth for domestic wells (ft)	WESS
DWA_pop_To	Double	Population served by domestic wells	WESS
Num_GSA	Float	Number of Groundwater Sustainability Agency (GSA) boundaries that fall within the boundary of a State Assembly District	WESS
Num_MunPub	Float	Count of municipal public supply wells	WESS
Num_DAC	Float	Count of Disadvantaged Communities	WESS
Num_SDAC	Float	Count of Severely Disadvantaged Communities	WESS
SRP	Float	Count of Superfund Sites	WESS
MIRTA	Float	Count of Military Installations, Ranges and Training Areas (MIRTA)	WESS
P139	Float	Count of airports permitted to use aqueous film-forming foam (contains PFAS)	WESS
MIRTA_SPR	Float	Count of sites listed as both a MIRTA and Superfund Site (SRP)	WESS

SRP_P139	Float	Count of sites listed as both a Superfund Site and P-139 Airport.	WESS
SRP_MIRTA_P139	Float	Count of sites listed as a MIRTA, Superfund Site, and P-139 Airport	WESS
Num_OG	Float	Count of active oil and gas wells	WESS
ChromePlat	Float	Count of chrome-plating facilities	WESS
Landfills	Float	Count of landfills	WESS
RefsTerms	Float	Count of refineries and bulk terminals	WESS
WWTFs	Float	Count of wastewater treatment facilities (WWTFs)	WESS
Excd_MCL	Float	Count of wells with at least one water sample with PFAS measured above any EPA Maximum Contaminant Level (MCL)	WESS
Excd_DL	Float	Count of wells with at least one water sample with PFAS measured above the detection limit but below any EPA Maximum Contaminant Level (MCL)	WESS
n_PFAS_sam	Float	Count of wells that were sampled and tested for PFAS.	WESS
p_excd_MCL	Float	Percent of wells sampled with at least one water	WESS

		sample with PFAS measured above any EPA MCL.	
p_excd_DL	Float	Percent of wells sampled with at least one water sample with PFAS detected above the detection limit but below any EPA MCL.	WESS
Total_pest	Double	Total pounds of pesticide active ingredients applied in domestic well areas between 2011-2019	WESS
MT_fully	Float	Count of fully dewatered domestic wells based on the Minimum Threshold (MT) groundwater level.	EKI
MT_partial	Float	Count of partially dewatered domestic wells based on the MT groundwater level.	EKI
MO_fully	Float	Count of fully dewatered domestic wells based on the Measurable Objective (MO) groundwater level.	EKI
MO_partial	Float	Count of partially dewatered domestic wells based on the MO groundwater level.	EKI
n_wells_sm	Float	Total number of domestic wells included in the Sustainable Management Criteria (SMC) drought analysis.	EKI
p_mt_full	Float	Percent of fully dewatered wells based on the MT groundwater level. Denominator is the total number of domestic wells included in the SMC drought analysis.	EKI
p_mt_part	Float	Percent of partially dewatered wells based on the MT groundwater level. Denominator is the total number of domestic wells included in the SMC drought analysis.	EKI
p_mo_full	Float	Percent of fully dewatered wells based on the MO groundwater level. Denominator is the total number of domestic wells included in the SMC drought analysis.	EKI

p_mo_part	Float	Percent of partially dewatered wells based on the MO groundwater level. Denominator is the total number of domestic wells included in the SMC drought analysis.	EKI
afford_hig	Double	Count of water systems located partially or fully within district boundaries with a high affordability burden, based on the SWRCB's 2024 Affordability Assessment.	SWRCB
pMHI_yes	Double	Count of water systems located partially or fully within district boundaries that exceeded the threshold for percent Median Household Income (MHI), based on the SWRCB's 2024 Affordability Assessment.	SWRCB
EWB_yes	Double	Count of water systems located partially or fully within district boundaries that exceeded the threshold for extreme water bill, based on the SWRCB's 2024 Affordability Assessment.	SWRCB
hseSES_yes	Double	Count of water systems located partially or fully within district boundaries that exceeded the threshold for household socioeconomic burden, based on the SWRCB's 2024 Affordability Assessment.	SWRCB
n_ws_affor	Long	Count of water systems that were included in the affordability assessment and assigned an affordability burden.	SWRCB
n_ws_pMHI	Long	Count of water systems that were included in the affordability assessment and evaluated for the percent MHI indicator.	SWRCB
n_ws_EWB	Long	Count of water systems that were included in the affordability assessment and evaluated for the extreme water bill indicator.	SWRCB
n_ws_hseSE	Long	Count of water systems that were included in the affordability assessment and evaluated for the household socioeconomic burden indicator.	SWRCB
p_afford_h	Float	Percent of water systems with a high affordability burden. Denominator is the count of water systems included in the assessment.	SWRCB

p_pmhi	Float	Percent of water systems that exceeded the threshold for percent MHI. Denominator is the count of water systems evaluated for percent MHI.	SWRCB
p_ewb	Float	Percent of water systems that exceeded the threshold for extreme water bill. Denominator is the count of water systems evaluated for extreme water bill.	SWRCB
p_hseSES	Float	Percent of water systems that exceeded the threshold for household socioeconomic burden. Denominator is the count of water systems evaluated for household socioeconomic burden.	SWRCB

References

1. Pace, C., Bangia, K., Fisher, E., Cushing, L., Morello-Frosch, R. (2023). UC Berkeley Water Equity Science Shop. Water System Boundaries version 2.0, Update for the Drinking Water Tool.
2. California Department of Education. (2022). Legislative Districts in California [dataset]. https://gis.data.ca.gov/maps/CDEGIS::legislative-districts-in-california-2/about. Accessed 11/01/2023.
3. Rempel, J., Pace, C., Cushing, L., Morello-Frosch, R. (2023). UC Berkeley Water Equity Science Shop. Domestic well areas version 2.0, Update for the Drinking Water Tool.
4. Dept. of Water Resources, (2023). i03 Groundwater Sustainability Agencies MapService. (https://data.ca.gov/dataset/i03-groundwater-sustainability-agencies-mapservice). Accessed 08/7/2023.
5. Municipal Wells Dataset (2023). California State Water Resources Control Board, Groundwater Ambient Monitoring and Assessment (GAMA), Groundwater Information System, available from https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/
6. U.S. Census Bureau. B19013: MEDIAN HOUSEHOLD INCOME IN ... - Census Bureau Table. 2017-2021 American Community Survey 5-Year Estimates. Available from https://data.census.gov/table?q=B19013.
7. Pace, C., Karasaki, S., Cushing, L., Morello-Frosch, R. (2023). Superfund Sites in California. Drinking Water Tool metadata, prepared by the Water Equity Science Shop, UC Berkeley.
8. Karasaki, S., Pace, C., Cushing, L., Morello-Frosch, R. (2023). Military Installations Ranges and Training Areas (MIRTA). Drinking Water Tool metadata, prepared by the Water Equity Science Shop, UC Berkeley.
9. Karasaki, S., Pace, C., Cushing, L., Morello-Frosch, R. (2023). Airports permitted to use PFAS-containing aqueous film-formig foam (AFFF). Drinking Water Tool metadata, prepared by the Water Equity Science Shop, UC Berkeley.
10. Karasaki, S., Pace, C., Cushing, L., Morello-Frosch, R. (2024). PFAS detections in water samples. Drinking Water Tool metadata, prepared by the Water Equity Science Shop, UC Berkeley.

11. Karasaki, S., Pace, C., Cushing, L., Morello-Frosch, R. (2023). Additional PFAS sources – Landfills, Chrome plating facilities, water treatment facilities, and refineries and terminals. Drinking Water Tool metadata, prepared by the Water Equity Science Shop, UC Berkeley.
12. All Wells Dataset, GIS Mapping, (2021). California Department of Conservation, California Geologic Energy Management Division (CalGEM), https://www.conservation.ca.gov/calgem/maps/Pages/GISMapping2.aspx, Accessed online January 6, 2022.
13. Libenson, A., Pace, C., Cushing, L., Morello-Frosch, R. (2023). Pesticide application in California, 2011-2019. Drinking Water Tool metadata, prepared by the Water Equity Science Shop, UC Berkeley.
14. United States House of Representatives. (2024). Directory of Representatives. Retrieved April 01, 2025 from https://www.house.gov/representatives#state-california
15. California State Senate. (2024). Senate Roster. Retrieved April 01, 2025 from https://www.senate.ca.gov/senators.
16. California State Assembly. (2024). Assembly Roster. Retrieved April 01, 2025 from https://www.assembly.ca.gov/assemblymembers.
17. EKI Environment & Water, Inc. (2024) Community Water Center Drinking Water Tool 2024 Well Impact Analysis Update.
18. Affordability Assessment. California State Water Resources Control Board, 2024. Available from https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/needs/2024/2024affordabilityassessment-metodology.pdf. Accessed July 22, 2024.