

California Conservation Easement Database (CCED)

Notice for Database Manual

Before You Use CCED Data:

Your use of CCED data signifies that you will abide by the guidelines below and in the Disclaimer that follows.

CCED contains GIS data for conservation easements over public and private property. While this data is from public records, **your use of the data should make every effort to respect the privacy concerns** and sensitivities of land owners and those agencies and organizations who work with them.

1. Any maps of CCED data should show clearly that easement properties are closed to any public access, unless CCED has specific information to the contrary. Very few easements allow public access.
2. Private land owner names are typically not included in CCED and should not be attached to CCED data shown on maps. When labeling easement properties, users should access the generic holding name field *ease_label*, use "Restricted lands", or use an equivalent general title whenever feasible.
3. Likewise, avoid showing on maps the individual agencies or organizations who hold easements, unless essential to your task. Instead, consider using the agency level field *eholdtyp* classifying the agency as: federal, state, local, or nonprofit, to indicate the type of easement holder.
4. If specific easement boundaries are not needed for map display, use center point symbols or other forms of abstraction.
5. CCED is provided as is, without any warranty of accuracy. CCED boundaries are as provided by various sources and have not been enhanced to align with parcels or other GIS data. Where CCED is missing data, please contact us at cpad@calands.org to let us know about these gaps.

CCED is suitable for a wide range of planning, assessment, analysis, and display purposes. CCED should not be used as the basis for official regulatory, legal or other such governmental actions – these types of uses require official land records from county recorders or easement holding agencies in the area of focus.

Thank you for your consideration and cooperation in using and improving CCED.

GreenInfo Network
July 2022

California Conservation Easement Database (CCED) - Version 2022a

CCED DATABASE MANUAL

Revised: July 2022

BEFORE USING DATA, see Data Disclaimer inside and note that:

- Easement lands are most frequently private property - maps must clearly show them with no public access
- CCED is not suitable for property survey or other legally-binding functions – see source agency data or County Recorder records for such information
- CCED data may not be the most current data for any specific agency or organization, as it is updated less frequently
- Display on maps of easement holder agency/organization names and actual property names should be avoided whenever feasible, in favor of more generic titles

For more information on CCED, go to: www.CALands.org/cced

CCED is published by GreenInfo Network
www.greeninfo.org



Contents

| | |
|--|-----------|
| Acknowledgements | 4 |
| Disclaimer | 5 |
| Summary | 5 |
| Disclaimer Details | 5 |
| Uses | 6 |
| Data Sources | 6 |
| Limitation of Liability | 6 |
| Acknowledgement of Indigenous and Native Lands | 7 |
| Summary | 8 |
| CCED 2022a – Key Statistics | 9 |
| I. Introduction | 10 |
| CCED Geography | 11 |
| Conservation Easement Status and Purposes | 11 |
| Easement Definition within a Parcel | 11 |
| Ownership vs. Management | 11 |
| No Public Access | 11 |
| Parcel Boundaries | 12 |
| III. Database Structure | 13 |
| IV. CCED Data Dictionary | 14 |
| V. CCED Data Procedures | 15 |
| VI. GAP Codes | 16 |
| VII. Known Issues In CCED | 18 |
| VII. CCED Releases and History | 19 |
| Current Release - CCED 2022a (July, 2022) | 19 |
| Brief History of CCED | 19 |
| CCED Release History | 20 |

Acknowledgements

GreenInfo Network staff who maintain CCED and created the data contained in it include:

Amanda Recinos, Kimberly Becerril, Saba Gebreamlak, Stephanie Ding

For more information on CCED and CPAD (data on fee owned protected areas), visit www.CALands.org

Current funding, from 2018 to 2022, is generously provided by the California Natural Resources Agency – we greatly appreciate this assistance.

Disclaimer

Summary

The California Conservation Easement Database (“CCED”) has been developed by GreenInfo Network for general use in land use planning, education or other activities that do not rely upon the data for a legally binding decision. While GreenInfo Network strives to provide the best data possible, GREENINFO NETWORK MAKES NO REPRESENTATION OR WARRANTY AS TO ITS ACCURACY, TIMELINESS, OR COMPLETENESS. GREENINFO NETWORK MAKES NO WARRANTY OF MERCHANTABILITY OR WARRANTY FOR FITNESS OF USE FOR A PARTICULAR PURPOSE, EXPRESSED OR IMPLIED, WITH RESPECT TO THESE PRODUCTS OR THE UNDERLYING DATA. Any user of this data, accepts same AS IS, WITH ALL FAULTS, and assumes all responsibility for the use thereof, and further covenants and agrees to defend, indemnify, and hold GreenInfo Network harmless from and against all damage, loss, or liability arising from any use of this product, in consideration of GreenInfo Network having made this information available.

Independent verification of all data contained herein should be obtained by any user of these products, or the underlying data. GreenInfo Network disclaims, and shall not be held liable for, any and all damage, loss, or liability, whether direct, indirect, or consequential, which arises or may arise from these products or the use thereof by any person or entity.

This edition of CCED should be cited in any maps, reports, websites or other products as: “California Conservation Easement Database (CCED) – www.CALands.org (July 2022)”

Disclaimer Details

This digital data and metadata, (hereinafter collectively referred to as the "information"), are provided on an "AS IS", "AS AVAILABLE" and "WITH ALL FAULTS" basis. Neither GreenInfo Network nor any of its employees makes any warranty of any kind for this information, express or implied, including but not limited to any warranties of merchantability or fitness for a particular purpose, nor shall the distribution of this information constitute any warranty.

GreenInfo Network shall in no event be liable to you or anyone else for any inaccuracy, error failures, delays or interruptions in the use of the database and shall in no event be liable to you or anyone else for any consequential, incidental, special or tort damages arising out of or relating to the use or inability to use the database. It is the sole responsibility of the user to determine whether or not the data is suitable for the intended purpose.

The information is collected from various sources and will change over time without notice. GreenInfo Network and its officials and employees assume no responsibility or legal liability for the accuracy, completeness, reliability, timeliness, or usefulness of any of the information provided nor do they represent that the use of any of the information will not infringe privately owned rights.

The information is not intended to constitute advice nor is it to be used as a substitute for specific advice from a licensed professional. You should not act (or refrain from acting) based upon the information without independently verifying the information and, as necessary, obtaining professional advice regarding your particular facts and circumstances.

Uses

CCED is made available without charge for a wide range of uses, for example, use by government agencies in planning and operations, use by private consultants in the development of plans and analyses, use by non-profit organizations and educational institutions for strategy, research, planning, management and other functions. While agencies, organizations, individuals and businesses may distribute free of charge copies of the data, any such replication must include this disclaimer and require the user to review the provisions therein.

CCED may be used on computer data networks, but should not be published for public website maps that allow users to view the data at a scale of 1:100,000 or larger.

See the attached document, "Before You Use CCED Data" for further use guidelines.

Data Sources

Data in the CCED is based on a wide range of sources within the budgets available for the data's development and maintenance. The source datasets have a range of publication dates, varying degrees of accuracy, various projections, and different attribute information. Over time, and as funding allows, some CCED boundaries will be aligned to ownership parcel boundaries, but that independent alignment work has not been conducted for this edition. GreenInfo Network has made every effort to standardize the multiple data inputs to create CCED, but occasional errors in this process are to be expected. GreenInfo Network does not provide the original datasets from primary data source providers.

Limitation of Liability

IN NO EVENT WILL GREENINFO NETWORK BE LIABLE TO YOU OR ANY THIRD PARTY FOR ANY DAMAGES ARISING OUT OF THE USE OF OR INABILITY TO USE THE DIGITAL DATA, EVEN IF GREENINFO NETWORK IS ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

July 2022

Acknowledgement of Indigenous and Native Lands

The GIS data in CPAD and CCED are based on land ownership or legal easements that restrict how lands can be used. The ownership focus of the databases is intended to assist in the planning, management, and long-term care of lands owned by government agencies and nonprofits for open space purposes. The lands represented here are the traditional unceded territory of more than 100 nations. To learn more about a particular territory please visit the [California Native Heritage Commission's Digital Atlas](#).

We recognize that the Western perspective of land ownership is limited and does not reflect an important range of cultural views, especially of many Indigenous peoples. Furthermore, land ownership as a structure has been used to promote empire and colonization.

These data represent only one lens of how to view California's landscape. CPAD and CCED are not intended to represent, replace, or negate different cultural views of lands such as spiritual ownership, stewardship, or caretaking.

As we seek to respect the many diverse Indigenous people connected to this land from time immemorial, we welcome feedback on how to improve and address non-Western perspectives and how to respectfully represent them. Email us at cpad@calands.org.

Summary

IMPORTANT: Easements are special types of protected areas, where the land can remain in private ownership. Consequently, anyone using California Conservation Easement Database (CCED) data shall follow these overall guidelines:

1. Any maps of CCED data should show clearly that easement properties are **closed to any public access**, unless CCED has specific information to the contrary (very few easements allow public access).
2. Private land owner names are typically not included in CCED and **should not be attached** to CCED data shown on maps. When labeling easement properties, users should access the generic holding name field *ease_label* or use “restricted lands” or equivalent general title whenever feasible.
3. Likewise, showing on public maps the individual agencies or organizations who hold easements should **be avoided** whenever feasible. Instead, consider using the agency level field *eholdtyp* classifying the agency as: federal, state, local, or nonprofit, to indicate the type of easement holder.

CCED contains data about lands that are under conservation or open space easement (as opposed to those in CPAD that are owned outright “in fee”). Easement lands are typically private property and are only rarely open to the public. Some easements overlay publicly-owned lands, with both a fee and easement status.

CCED easement lands range from the very small parcels in cities to large rural or wild landscapes. Uses on these parcels may include farming, ranching, timber harvesting or open space (including use as floodways, scenic viewsheds or for the protection of biodiversity). Easement protected lands are sometimes parts of larger protected landscapes and sometimes they exist on their own. It is important to note that one privately owned property may have two or more easements held by agencies or nonprofits (“stacked” easements) – this can affect statistical counts of easement acres.

This edition of CCED inventories over 2.3 million acres in 13,070 easements, held by over 235 agencies and nonprofits. CCED is published by GreenInfo Network (www.greeninfo.org). Access to CCED data files is available online - see www.CALands.org for more information. CCED is available in ESRI shape file format. Related data sets are available at www.CALands.org for fee-owned protected areas (CPAD).

The current release is CCED 2022a, published in July 2022. This is the tenth official release of the CCED data set.

NOTE: CCED is regularly submitted to the National Conservation Easement Database (NCED – conservationeasement.us) and is expected to become a part of their next release, though minor differences may be present.

CCED 2022a – Key Statistics

July 2022

IMPORTANT: The CCED dataset still contains some overlapping “stacked” polygons (see Section III., Database Structure below). The stacked polygons represent lands under easements held by more than one agency, multiple funding sources, transaction dates, or other unique situations. We continue to resolve these duplicate polygons however some overlaps remain until we are able to verify further details about the easement. Additionally, some easements exist on land that is also in fee ownership, and will overlap wholly or partly with land identified in CPAD, the California Protected Areas Database.

CCED statistics are provided statewide and for the top 10 easement holding agencies. This reflects the amount of acreage estimated to be on the ground. Agency level statistics are calculated using the primary easement holding agency or organization. When multiple agencies hold an easement over the same land, the most local agency is assigned as the primary easement holder.

- Total acres statewide in California = 2,305,607¹
- Count of easement polygons = 13,070
- The largest easement in CCED is 82,102 acres
- The smallest is less than 1 acre
- The average easement size is 687 acres²
- The median easement size is 68.4 acres²

¹Acres are estimated given data constraints. The CCED database contains 2,308,607 acres. The 3,000 acre difference is due to both slivers and true overlaps.

²The average and median size calculation methods changed in 2022b to accommodate the incremental shift from single easement records to multi-parcel easement records.

Top 10 easement holding organizations:

| AGENCY/ORGANIZATION | ACRES |
|---|---------|
| The Nature Conservancy | 334,896 |
| California Rangeland Trust* | 212,771 |
| California Department of Fish and Wildlife | 159,014 |
| United States Fish and Wildlife Service | 157,636 |
| United States Natural Resources Conservation Service | 137,886 |
| Sonoma County Agricultural Preservation and Open Space District | 114,032 |
| Tejon Ranch Conservancy | 109,014 |
| Pacific Forest Trust | 90,088 |
| Northcoast Regional Land Trust | 58,033 |
| Marin Agricultural Land Trust | 54,300 |

*California Rangeland Trust (CRT) easements are not completely represented in CCED as CRT has not made this information available. The [California Rangeland Trust website](#) reports that they have “helped permanently protect 365,368 acres of privately-owned rangeland.” as of 6/2022. It is unknown if the full 365,368 acres are easements held by CRT. The 2015 [Land Trust Alliance census](#) reported CRT held 287,000 acres.

I. Introduction

The California Conservation Easement Database (CCED) inventories lands that have been protected through conservation or open space easements. A separate database (CPAD – the California Protected Areas Database) tracks open lands owned outright (“in fee”).

Conservation easements are legal restrictions created by a contract between a land owner and a qualified agency or organization that are usually based on limiting the future uses of a property to those compatible with open space, conservation, farming or other defined uses. Such easements reduce or remove development opportunities on these lands. All easements in California are officially filed with the relevant County Recorder’s office (not necessarily the Assessor’s office) and are public records data. Some easements are acquired with public funding; others are created by landowner donations, and many by a combination of the two. Where public funding is involved, public records describing and mapping the property and presenting its appraisal are created.

CCED is focused on lands conserved for natural or other open space purposes and does not include all easements. For example, it does not include utility easements or easements created for short terms. Williamson Act and Farmland Security Zones are not included unless they have additional protections on the land.

CCED is suitable for a wide range of planning, assessment, analysis, and display purposes. CCED should not be used as the basis for official regulatory, legal or other such governmental actions – these types of uses require official land records from county recorders or easement holding agencies in the area of focus.

The lands in CCED are typically defined by the agency or organization who manages the site, and information on the private land owner is only reported if readily available in public records and/or reported to CCED. Some easement holders do indicate owner name in property titles (e.g., “Jones Ranch easement”) and this source information is transferred into CCED.

Access to CCED GIS data is through a download link, see more information at CALands.org/cced. CCED is available in ESRI shape file format.

CCED has been developed by GreenInfo Network, a non-profit technology support organization www.greeninfo.org, with support from other non-profits, foundations and public agencies. Previous supporters of CPAD and CCED have included: California Department of Parks and Recreation, Sierra Nevada Conservancy, and the Coastal Conservancy. From 2012 to 2014, CCED development was supported by a grant from the California Strategic Growth Council through the U.S. Geological Survey’s Gap Analysis Program (GAP). Current funding, from 2018 to 2022, is generously provided by the California Natural Resources Agency – we greatly appreciate this assistance.

NOTE ABOUT EASEMENTS ACROSS THE US: A national inventory (the National Conservation Easement Database, or NCED) is available to track easements.

II. Data Definitions

CCED Geography

CCED covers the entire state of California. Easement boundaries are most frequently identified by the managing agency. Given their unique status, these boundaries may not align precisely to digital assessor parcel boundaries. Future releases will explore options for improving alignment (see “VI. Known Issues in CCED” below for further discussion).

Conservation Easement Status and Purposes

Lands in CCED have been identified as those with legal conservation or open space easements, typically serving one or more of the following open space purposes:

- Habitat Conservation - wildlife or plant reserve protected specifically for habitat
- General Open Space – open land used serving a broad range of purposes
- Historical/Cultural - historic sites
- Forestry - active forest harvesting, tree growth for forestry
- Agriculture - crop lands including irrigated pastures
- Ranching - grazing lands – grasslands, mixed forest, dry and grazing pasture
- Water Supply - watersheds, waterways
- Scenic area – viewscapes, etc.
- Flood Control – flood plains, natural flood control channels

Easement Definition within a Parcel

Conservation easements can be placed on part of a parcel, or the entire parcel. Existing buildings, hardscape areas, and ancillary structures may be present on the parcel. The data in this release has not been reviewed in great detail to include or exclude portions of parcels that may not be a part of an easement. **Users should therefore exercise caution when using the data and should refer to county recorder property records and/or the easement holding agency/organization for most current and accurate information.**

Ownership vs. Management

CCED tracks lands according to the agency that manages the easement over the property. Information on the owner of the land is not included, nor is it planned to be included in future releases.

No Public Access

Almost all lands in CCED should be considered *Closed* and not open to the public. **Any maps including easement lands must clearly and prominently indicate that these lands are *Closed* areas – and any map of recreational or other public access sites/opportunities must not include easement lands.**

Where easement properties are known to allow managed public use, these opportunities may be shown, but only where they are validated with the easement holder.

Parcel Boundaries

While CPAD has generally been aligned to assessor parcel boundaries, much of the data in CCED is not. In many cases easement boundaries from source agencies have been digitized independently of assessor parcel data – sometimes due to accuracy issues in the assessor data, sometimes because assessor data may not have been available when easement data was created. In addition, assessor parcels in rural areas are not always highly accurate spatially.

Easements may also vary in their coverage of a parcel. Some easements cover an entire parcel; others only define a portion of the parcel as an easement. An assessment of the alignment of easement edges with CPAD lands shows it would require substantial work. Should funding be available, it will be addressed in future releases.

III. Database Structure

The CCED easement database is a single shapefile containing polygons. The current CCED data set contains a mix of geographic levels. Some easements are defined by individual parcels (or pieces of parcels), while others are dissolved groupings of parcels. Future releases of CCED will explore the possible use of a holdings/units structure, as is implemented in CPAD, where parcels aggregate to commonly named units in order to provide consistent definitions of parcels and aggregated easements held by the same land owner and managing agency.

It should be noted that the source data sets used to create CCED often identify easements in different manners. In particular, the overlap of easements when there are multiple easement holders and/or funding sources is not consistent. CCED makes incremental attempts to standardize the data from disparate sources, but additional work will be needed in future releases to standardize the data. For this reason, users should exercise caution when reporting acreage statistics that may contain stacked polygons.

The 2019 release of CCED marked a significant improvement in resolving stacked easements. Records were reviewed to identify easements with similar geography and attributes. When an easement was verified to cover the same land, with only minor edge differences (less than an acre and/or less than 10% of the total easement area), stacked polygons were resolved.

Stacked polygons were resolved by:

- Selecting the most accurate polygon feature
- Assigning the most local agency as the primary easement holder
- Listing all other easement holders in the secondary easement holder field
- Providing any necessary data notes in the comments field

Scenarios we were not able to resolve were those that:

- Easement attributes varied significantly (name, reported size, access)
- Easement geometry varied significantly (shape or size)

IV. CCED Data Dictionary

We strive to keep the core fields of CCED in alignment with NCED, allowing for the California data to efficiently transfer into the national data set. However, not all NCED fields are included in CCED. In the 2021a release, the data schema of CCED was refreshed to incorporate recent changes in the NCED database schema. The table below lists the fields released in CCED, the metadata details: field alias, domains, data type, length, and source.

| Field Name | Description |
|-------------------|--|
| e_hold_id | Unique ID for each easement database record |
| ease_label | Conservation Easement (text, for use in most mapping displays, rather than site name) |
| sitename | Site name, as reported by agency or source data |
| esmthldr | Primary easement holder (agency) name |
| eholdtyp | Easement holder level: federal, state, local, NGO, or other legal classification |
| s_emthd1 | Any additional easement holders |
| e_type | Main purpose of the easement - this field is under development. |
| pubaccess | Identifies if an easement is: closed, restricted, or open |
| duration | Identifies whether the easement is permanent or term-limited (if 10+ years) |
| term | Numeric field noting the term of the easement |
| comments | Any comments from either the source, provider, or aggregator |
| date_est | Full date the easement was established (MM/DD/YYYY) or date of project approval. |
| year_est | Year easement was established (YYYY) |
| county | County holding is within (or mostly within) |
| src_attr | Source of the easement table attribute data |
| src_align | Source of the easement spatial geometry |
| gapcat | Gap rank 1, 2, 3, 4 - as assigned by NCED. NOTE: This field is not always sync with majority/plurality displayed in the GAP acres fields. Efforts are underway to resolve these differences with PADUS and NCED (8/2021). |
| iucncat | IUCN management category: Ia, Ib, II, III, IV, V, VI, N/A |
| nced_uid | NCED identifier (mostly unique) |
| eholduid1 | Unique identifier by any other data providing agency |
| last_edit | Date of last edit MM-DD-YYYY |
| cced_id | CCED identifier (mostly unique) from pre 2021a releases. To be retired. |
| gis_acres | Easement acres, as calculated in GIS |
| GAP1_acres | Total acres with GAP code 1, extracted from PADUS |
| GAP2_acres | Total acres with GAP code 2, extracted from PADUS |
| GAP3_acres | Total acres with GAP code 3, extracted from PADUS |
| GAP4_acres | Total acres with GAP code 4, extracted from PADUS |
| GAP_Source | Source of GAP acres in the fields: GAP1_acres, GAP2_acres, GAP3_acres, GAP4_acres |
| TOT_GAP_AC | Sum of the fields: GAP1_acres, GAP2_acres, GAP3_acres, GAP4_acres NOTE: The sum of this field may not be an exact match with gis_acres, due to geoprocessing, differences between NCED and CCED, as well as rounding. |

V. CCED Data Procedures

CCED makes use of a wide range of data sources, including source agency databases, parcel data from counties, and other research. In general, the following approach has been taken:

- 1. AGENCY SOURCE DATA:** Source agency GIS data is secured for agencies, where it is available. With hundreds of agencies and organizations having holdings in CCED, contact with each of these is not possible. However, the top 20 agencies/organizations are believed to hold over 90 percent of the easements in CCED and many have GIS data. Additionally, some easements are defined by public data sets covering county or statewide inventories (eg, that of the Wildlife Conservation Board - WCB). Not all agencies have contributed data to CCED. When possible, additional research is done to define very large known easements through available public information sources.
- 2. PARCELS AS GEOMETRIC BASE:** CCED is evaluated in the context of assessor parcels and, to some extent, the Public Land Survey System (PLSS) but is not aligned to these base data layers. The information gathered will be used in future releases to guide a refined geometry of easements. Easements do not always cover entire parcels, as they may exclude existing structures and development.
- 3. CROSS-CHECK WITH CPAD:** CCED is spatially reviewed in context with CPAD to try and evaluate easement boundaries, future efforts will be required to resolve edge matching. Both gaps and silvers occur when using CCED in conjunction with CPAD and other GIS layers.
- 4. RESOLVING CONFLICTS:** Agency source data is generally considered to be authoritative in CCED. When an easement is defined in multiple contributing data sources, data contributed directly from the agency managing the easement is assumed to be authoritative over compiled data sets such as WCB. Given the unique scenario of easements, additional in-depth research is often required by data users to accurately define the easement boundaries.
- 5. AERIAL IMAGE CHECKS:** As possible, 1-meter or better aerial photography is used to verify the location of an easement. Future efforts may be taken to check boundaries against physical features such as fence lines, roads, waterways, and physical structures. However, parcel boundaries are accepted even if they do not perfectly align to such aerial images.
- 6. COUNTY BREAKS:** Easements that span a county boundary are not split. They are assigned to the county they have the most acreage in.
- 7. SCALE:** The scale of accuracy is highly varied across the state. In general, the data is best used at scales above 1:24,000.

VI. GAP Codes

Starting with the 2021a release, we have included additional details about the GAP status of easements. GAP codes are a USGS-defined metric that reflects management intent (USGS 2020, Prior-McGee 1998). GAP codes are categorized on a scale from 1 to 4 where GAP 1 and 2 are areas primarily managed with the intent to protect biodiversity, GAP 3 are areas managed for multiple uses including conservation, recreation, and extraction and GAP 4 has no known mandate for biodiversity protection. Data for GAP codes in CCED is sourced from PADUS and NCED. As additional data about GAP codes becomes available we will aim to update and improve this field in CCED.

The following summary statistics highlight the information available as well how different data sets, methods, and approaches will yield different results. Caution should be exercised when reporting any statistics on GAP codes. Our methods are still new and a work in progress. Details about the geoprocessing are available through calands.org.¹ It is important to understand that the acreages reported are estimates and for that reason have been rounded using the following methods:

Any holding less than 1 acre rounds the GAP acreage to two decimal places. Holdings that are 1 acre or larger have their GAP acreage rounded down to the nearest whole numbers. This rounding helps reduce the reporting of slivers and helps reduce the perception of higher accuracy beyond what is significant.

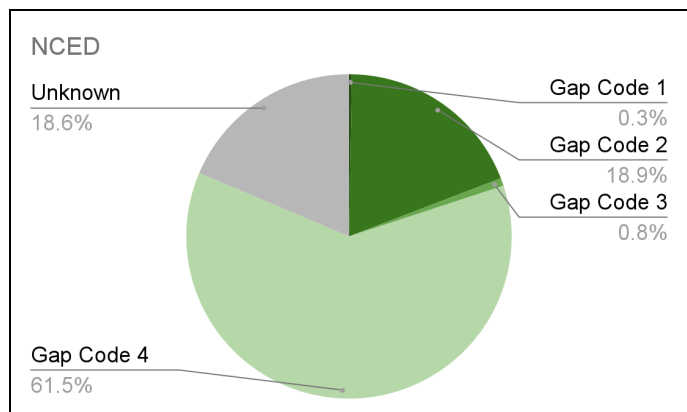
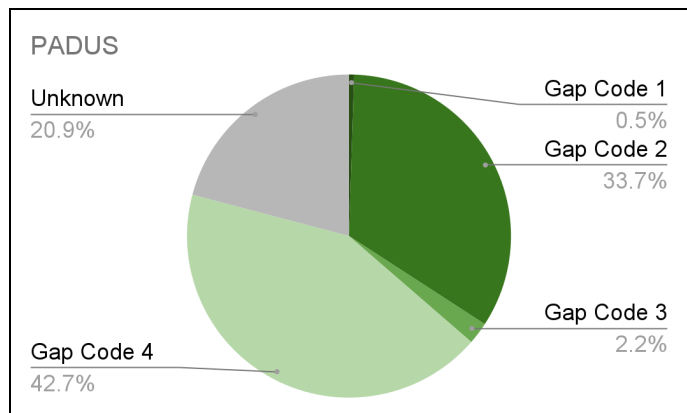
We estimate the error introduced as a result of this rounding, is less than 2% of the total CCED acres.

PADUS

With a geo-spatial intersection of CCED and PADUS we assume an easement can contain acreage under multiple GAP codes. The results of this process assign GAP codes to 79.3% of the acres inventoried in CCED.

NCED

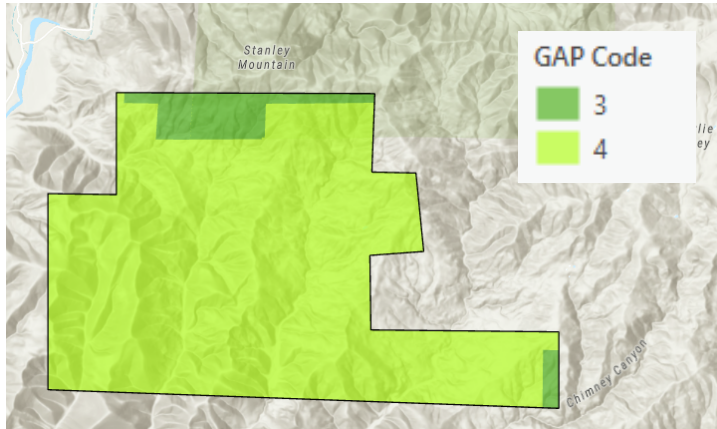
In comparison, looking at NCED data, an easement record in the database can only be assigned one GAP code. The results of this method assign GAP codes to 81.5% of acres inventoried in CCED.



¹ Additional information on geoprocessing steps can be found at: calands.org/wp-content/uploads/2022/07/Method-for-Including-Gap-Codes-in-CPAD-and-CCED.pdf

Quantifying differences

The acreage discrepancies between PADUS and NCED are likely explained largely by the difference in methods applied. The example of Alamo Creek Conservation Easement helps illustrate the difference in methods.



Alamo Creek Conservation Easement

For both data sets the easement area is reported as 3,410 acres. However, the method applied using PADUS as a data source allows for the more detailed GAP code distribution showing that the easement is predominantly GAP code 4 but is also 7% GAP Code 3 .

| SOURCE | GAP 1 | GAP 2 | GAP 3 | GAP 4 | TOTAL ACRES |
|--------|-------|-------|-------|-------|-------------|
| PADUS | 0 | 0 | 232 | 3,179 | 3,411 |
| NCED | 0 | 0 | 0 | 3,411 | 3,411 |

Other factors, in addition to differing methods, that help explain the acreage differences include:

- **Data completeness** - PADUS, NCED, and CCED are all living data sets with various stages of improvement and changes. It is therefore expected that a new easement or GAP classification may occur in one database before being incorporated into the other 2.
- **Slivers and gaps** - The data sets are also varied in the amount of error introduced through edge matching and overlaps. While any one silver or gap contains a small amount of inherit error, the total sum of these errors could add up to roughly 50,000 (2% of the lands in CCED).

Completing the GAP Inventory

Despite these differences, we can estimate the remaining effort needed to complete the assignment of GAP codes to easements in CCED. Reviewing the unknown data by agency, records, and acreage it seems reasonable to assume we would need to connect with roughly 75 agencies for 1,000 easements to define a GAP code for about 450,000 acres.

| DATA SOURCE | AGENCIES | EASEMENT RECORDS | ACRES |
|-------------|----------|------------------|---------|
| PADUS | 80 | 1,015 | 471,350 |
| NCED | 70 | 1,225 | 420,119 |

VII. Known Issues In CCED

CCED is a developing data set and contains a number of unresolved issues.

Main issues:

- 1) Not all agency/organization easement data is in CCED. CCED is heavily focused on easements that are already defined by the managing agency in GIS format. Many smaller easements are not included, as it is difficult to survey all possible easement holders across the state. Efforts are under way to encourage all easement-holding agencies/organizations to participate in CCED. In particular, many city and county easements are not yet included.
- 2) Alignment of easements varies greatly - some match parcel boundaries, some use physical features of the landscape or manmade features, others are loosely defined with no obvious reason for the boundary definition. CCED currently accepts any agency/organization submitted boundary as the most accurate. Future release will attempt to improve the alignment and accuracy of easement boundaries.
- 3) Slivers will exist when using CCED in coordination with other layers such as CPAD.
- 4) Complete attributes are not always available for all easements; these are blank or specified as "Unknown" until further information is found.
- 5) Easements have not been attributed as being on land or water, future releases may include tracking of tidal or submerged lands.
- 6) Agencies may track multiple easement holders on one property differently. Stacked polygons are used to indicate multiple easement holders with significant differences in the geometry and/or attributes. For this reason, CCED users must use caution when reporting any acreage or number easements statistics. CCED 2018 removed many duplicate easements in previous releases, and 2019 made significant improvements in overlapping sliver areas, but not all easements have not been comprehensively resolved.
- 7) Efforts to include additional information on GAP codes have been made, using data from PADUS and NCED. However, at times, the reported acreage and overall GAP code of an easement will differ. Some easements have areas where the GAP code is unknown, and/or areas have been assigned multiple GAP codes.

VII. CCED Releases and History

Current Release - CCED 2022a (July, 2022)

The tenth official release of CCED includes the addition of both new and updated data. Over 30,000 new acres have been added and include the addition of new and notable easements. It also continues our effort to incrementally improve estimated GAP code acreages with each new release.

Notable aspects of the work in this release:

- In addition to PAD-US GAP Code information, we have included a small set of local agency updates. These updates serve as a pilot project in how future work can support the collection, documentation, and update of GAP code data from local agencies. This work is an extension to the previously established [method](#) for inclusions of CPAD GAP code data that started with the 2021a release of CPAD.
- Addition of roughly 30,000 acres of easements. With significant new lands added for: Feather River Land Trust, The Land Conservancy of San Luis Obispo County, and the San Joaquin Council of Governments

As with any large data gathering program, there are likely to be lands that have been missed, wrongly included, or miss-attributed. If you find errors, please contact GreenInfo Network at cpad@CALands.org. Not all inquiries can be responded to given funding constraints. However, issues and errors are logged for future research if/when funding is available.

Brief History of CCED

CCED was developed during 2013-2014 and first published in March 2014. The dataset was created in response to direction from the California Strategic Growth Council (SGC), which is overseeing a wide range of planning related efforts for the state. The data has been prepared in response to frequent requests by local, state and federal agencies and nonprofits for a more complete representation of California's protected landscape. Easements are a vital part of protected California's natural resources. As such, it is important to know their location, size and how they relate to a whole host of other features (soil types, watersheds, flood control, habitat, etc.).

Initial efforts to track easements go back as far as the initial work on CPAD in the 1980s, mostly focused in the San Francisco Bay Area. However, funding only became available in 2013 to try and standardize and improve information about easements. Previously, when data on a conservation easement was received it was filed in a digital collection of folders and files. It was not integrated with other data on easements, reviewed for accuracy, or researched for important attributes.

In the early 2000s, the State of California developed an initial statewide coverage of protected lands known as the Public and Conservation Trust Lands (PCTL) database. This data included mainly state and federal lands owned in fee, but it did include some conservation easements. It did not include: regional lands, local lands, non-profit lands – for both fee and easements. It was last updated in 2005 and is now a legacy data set, replaced by CPAD and CCED.

From the early 2000s to 2006 GreenInfo Network received funding from a variety of sources to advance the CPAD content, structure and distribution. However, easement data did not receive funding and remained stagnant until 2012. In late 2012, GreenInfo Network began a major project to improve CPAD and create CCED, supported by a grant from the California Strategic Growth Council in collaboration with the USGS Gap Analysis Program. See details on www.CALands.org.

In 2015, GreenInfo received funding from the California Natural Resources Agency for two years of support for CPAD and CCED. In 2018 GreenInfo received additional funding from the California Natural Resources Agency and the Department of Water Resources to continue improvements to the database. Those have included the addition of easements and the migration to a multi-editor environment (in 2021).

CCED Release History

CCED 2021b (Published December 2021) – The ninth version of CCED included 19,000 new acres with major additions to easements held by California Rangeland Trust, City of Elk Grove, Siskiyou Land Trust, and Yolo Land Trust.

CCED 2021a (Published August 2021) – The eighth version of CCED included two major structural updates 1) a technical migration of the data to a PostGIS, enabling a multi-editor environment 2) the inclusion of GAP Codes from PADUS. It also improved in completeness with the addition of 32,500 acres mostly through the update of 10 large easement holding agencies.

CCED 2020b (Published December 2020) – The seventh version of CCED focused on additions of newly identified easements from Big Sur Land Trust, California Department of Forestry and Fire Protection, Eastern Sierra Land Trust, Feather River Land Trust, Northcoast Regional Land Trust, Pacific Forest Trust, and the Riverside County Regional Conservation Authority totalling over 32,500 acres. Topological errors were also resolved, aligning edges with gaps and overlaps.

CCED 2020a (Published June 2020) – The sixth version of CCED focused on the addition of new lands (over 14,000 acres) as well as continued efforts to resolve topological errors for over 1,000 acres.

CCED 2019 (Published November 2019) – The fifth version of CCED focuses on the addition of new lands as well as resolving topological errors, most notable data slivers resulting in overlaps.

CCED 2018 (Published December 2018) – The fourth version of CCED is an important release, which focused on adding new lands that totaled over 500,000 acres.

CCED 2016 (Published December 2016) – This major release included the addition of hundreds of new agencies and over half a million new acres. Many duplicate easements were resolved and fields were improved to facilitate better syncing with the national NCED database.

CCED 2015a (Published April 2015) – The second release of CCED was a minor release. It included the addition of 37 easements and covered 71,898 new acres. Data formats were changed, for three fields, to match NCED.

CCED 2014a (Published March 2014) – The first release of CCED, it included conservation easements held by 93 agencies/organizations covering 1.5 million acres. Initial attempts were made to standardize the data attributes, assess edge alignment, and compile spatial data from all contributing groups. The release also defined the database structure, documented known issues, provided a detailed user manual, and outlined a use agreement and data usage policy for CCED.