Pursuant to Governor Newsom's Executive Order N-29-20, members of the Resources & Infrastructure Committee or staff will participate in this meeting via a teleconference.

RESOURCES & INFRASTRUCTURE COMMITTEE

REGULAR MEETING
Monday, May 11, 2020 - 2:00 PM

AGENDA

Please click the link below to join the webinar:
https://zoom.us/j/95065447805?pwd=QjhxRndEUnBITE4wOGRBTlpxMDVxQT09
Password: 976829

Or iPhone one-tap:
US: +16699006833,,95065447805# or +13462487799,,95065447805#
Or Telephone:
Dial (for higher quality, dial a number based on your current location):
US: +1 669 900 6833 or +1 346 248 7799 or +1 253 215 8782 or +1 312 626 6799 or +1 929 205 6099 or +1 301 715 8592
Webinar ID: 950 6544 7805
International numbers available: https://zoom.us/u/ajLsVzFAkOr

A. CALL TO ORDER

B. ESTABLISH QUORUM

C. CHAIRMAN'S REPORT

D. AD HOC COMMITTEE REPORTS

1. PUBLIC COMMENT

Members of the public may now address the Committee on any item of interest within the jurisdiction of the Committee but not on its agenda today. Future agenda items can be suggested at this time. In compliance with the Brown Act, the Committee cannot discuss or act on items not on the agenda. Each speaker has up to three minutes.

2. CONSENT AGENDA

A. Consideration to Approve the April 13, 2020 Regular Meeting Minutes and April 22, 2020 Special Meeting Minutes

3. REGULAR BUSINESS

A. Discussion and Consideration Regarding Resources and Infrastructure Committee Bylaws and Forward to the Board of Directors for Approval

B. Report from Ad Hoc Committee on Water Demand Report

4. FUTURE AGENDA ITEMS

5. ADJOURN

RESOURCES & INFRASTRUCTURE COMMITTEE

REGULAR MEETING
Monday, April 13, 2020 - 2:00 PM

MINUTES

1. Teleconference

A. CALL TO ORDER **[0:00]**

Chairman Pierson called the meeting to order at 2:00 p.m.

B. ESTABLISH QUORUM **[0:00]**

Committee members present via Zoom: David Pierson, Karen Dean, Paul Nugent, Brad Fowles, Tom Gray and James Webb.

Staff present via Zoom: District Engineer & Utilities Manager Ray Dienzo, General Manager John Weigold, Finance Manager Pamela Duffield and Deputy District Clerk Haley Dodson.

Public present (includes visiting CCSD Board members):

Cindy Steidel
Donn Howell
Crosby Swartz
Harry Farmer
Elizabeth Bettenhausen
Michael Calderwood
Tina Dickason

C. CHAIRMAN'S REPORT **[0:00]**

No Report.

2. PUBLIC COMMENT [0:00]

No Public Comment.

3. CONSENT AGENDA [0:00]

A. Consideration to Approve the March 9, 2020 Regular Meeting Minutes

Motion to approve the minutes.

Motion by: Vice-Chair Dean

Seconded by: Member Nugent

The motion was approved 5-Ayes (Dean, Gray, Fowles, Nugent, Webb), 0-Nays, 0-Absent.

4. REGULAR BUSINESS [0:01]

A. Discussion and consideration to amend the Resources & Infrastructure Committee Bylaws to change the regular meeting date and time. **[0:01]**

Item continued to May Regular Meeting for addition of clarifying language.

B. Receive Updates from All Ad Hoc Committees **[0:03]**:

1. Water Demand Management and Offset Measures Ad Hoc Committee:

No Report.

2. Review the Current UWMP Ad Hoc Committee:

No Report from Committee. Committee's work discussed under Item 4F below.

3. Water Conservation and Gray Water Use Ad Hoc Committee:

No Report.

4. Produce Informational Videos on Water Meter Reading and Other Topics Ad Hoc Committee:

Paul Nugent reports. Notes need to produce more content.

5. Research Offsite Water Storage Possibilities Ad Hoc Committee **[0:05]:**

Jim Webb, David Pierson and Paul Nugent report on meeting with Supervisor Gibson, outreach to Tom Luster of Coastal Commission staff.

Letter from Tom Luster will be distributed to Committee members and discussed at upcoming Special Meeting (see 4F below).

Public Comment on Items B1-5: None.

C. Receive Progress Report on the Investment Grade Audit (IGA) **[0:18]**:

General Manager Weigold and District Engineer Dienzo report.

Public Comment: None.

D. Receive Report from Ray Dienzo on the Orange County Facility Tour **[0:23]**:

District Engineer Dienzo reports.

Public Comment: None.

E. Discussion and consideration regarding reviewing and revising the CIP List and forwarding to the Board of Directors **[0:34]**:

Vice-Chair Dean reports.

Public Comment: None.

Motion to forward report to Board of Directors:

Motion by: Vice-Chair Dean

Seconded by: Member Gray

The motion was approved 5-Ayes (Dean, Gray, Fowles, Nugent, Webb), 0-Nays, 0-Absent.

F. Receive update on the Urban Water Management Plan (UWMP) consultant **[0:36]**:

District Engineer Dienzo, General Manager Weigold and Finance Manager Duffield report.

Staff advises that Resources & Infrastructure Committee will need to hold special meeting to consider consultant contract.

Public Comment: None.

Motion to schedule special meeting on Wednesday, April 22, at 2 p.m. {Meeting also will include new report from Research Off Site Storage Possibilities Ad Hoc Committee):

Motion by: Vice Chair Dean

Seconded by: Member Nugent

The motion was approved 5-Ayes (Dean, Gray, Fowles, Nugent, Webb), 0-Nays, 0-Absent.

G. Receive update on the Conservation Program efforts **[0:47]**:

District Engineer Dienzo reports.

Public Comment: None.

5. FUTURE AGENDA ITEMS [0:51]

No future agenda items.

6. ADJOURN

Chairman Pierson adjourned the meeting at 2:52 p.m.

RESOURCES & INFRASTRUCTURE COMMITTEE

SPECIAL MEETING
Wednesday, April 22, 2020 - 2:00 PM

MINUTES

1. CALL TO ORDER [0:00]*

Chairman Pierson called the meeting to order at 2:00 p.m.

2. ESTABLISH QUORUM [0:00]

Committee members present via Zoom: David Pierson, Karen Dean, Paul Nugent, Brad Fowles, Tom Gray and James Webb.

Staff present via Zoom: General Manager John Weigold, Finance Manager Pamela Duffield, District Engineer & Utilities Manager Ray Dienzo and Deputy District Clerk Haley Dodson.

Public present (includes visiting CCSD Board members):

Cindy Steidel
Mike Lyons
Christine Heinrichs
Elizabeth Bettenhausen
Donn Howell
Harry Farmer
Tina Dickason

3. CHAIRMAN'S REPORT [0:00]

No report.

4. PUBLIC COMMENT ON AGENDA ITEMS [0:00]

Elizabeth Bettenhausen
Christine Heinrichs
Tina Dickason

Note: Elizabeth Bettenhausen also submitted her comments in writing.

5. REGULAR BUSINESS [0:11]

A. Discuss and review Staff recommendations regarding Urban Water Management Plan (UWMP) consultant, scope of work, cost estimate and project budget reallocations.

Staff Reporting:
General Manager Weigold
District Engineer Dienzo
Finance Manager Duffield

Public Comment:
Tina Dickason
Christine Heinrichs

Motion: To approve staff recommendations and forward them to the Finance Committee.

Motion by: Member Gray

Seconded by: Member Nugent

The motion was approved 5-Ayes (Dean, Gray, Fowles, Nugent, Webb), 0-Nays, 0-Absent.

B. Receive update from Research Offsite Water Storage Possibilities Ad Hoc Committee. **[0:53]**

Report by R&I Committee Chairman Pierson and Member Webb.

No action taken.

6. FUTURE AGENDA ITEMS [1:00]

Adoption of Final Report by Ad Hoc Committee on Water Demand; to be included on Agenda of next regular Resources & Infrastructure Committee meeting.

7. ADJOURN [1:01]

Chairman Pierson adjourned the meeting at 3:01 p.m.

*** Hrs:Mins on recording**

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CAMBRIA COMMUNITY SERVICES DISTRICT

RESOURCES AND INFRASTRUCTURE STANDING COMMITTEE BYLAWS

I. Statement of Purpose and Authority

The purpose of the Resources and Infrastructure Standing Committee ("Committee") is to serve the Cambria Community Services District ("CCSD") with respect to infrastructure and resources as follows:

A. Assess existing resources and gather information regarding infrastructure and resource needs of the community.

B. Establish a collaborative working relationship with the public and the CCSD Board of Directors.

C. Create plans for meeting the needs of the community within the bounds of current and potential resources and priorities of the CCSD.

D. Recommend plans of action to the Directors of the CCSD regarding actions to meet the community infrastructure and resources needs

II. Statement of Responsibilities

A. Members of the Committee and their activities are bound by all applicable provisions of the Brown Act (Government Code Sections 54950 et seq.).

B. Members of the Committee shall not participate in discussion of, or vote on, issues constituting conflicts of interest – "no public official shall make, participate in making, or in any way attempt to use his official position to influence a governmental decision in which he knows or has reason to know he has a financial interest." (Government Code Section 87100).

C. Members of the Committee are charged with protecting and upholding the public interest and with exhibiting the highest level of ethics in all actions.

III. Terms of Appointments and Offices

A. The Committee shall consist of five community members with full voting privileges and one ex officio board director as chairperson. Committee members shall be appointed by the CCSD Board of Directors with a majority vote.

B. Each Committee member shall serve a two-year term. Upon the request of a retiring Committee member, at the end of a completed term of office, with the recommendation of the Committee, and at the discretion of the CCSD Board of

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Directors, a Committee member may be appointed for an additional term of up to two years.

C. Each Committee member shall live within the CCSD boundaries, hold no other public office within the CCSD, and shall serve at the pleasure of the CCSD Board.

D. The members of the Committee shall elect a Vice-Chairperson and Secretary, and the Chairperson shall be appointed by the CCSD Board of Directors. The Chairperson shall preside over meetings, appoint appropriate committees, sign reports, establish meeting agendas, and represent the Committee at the regular Board meeting. In the absence of the Chairperson, the duties of this office shall be performed by the Vice Chairperson. The terms of these offices shall be one year with elections occurring at the first regular meeting of each year.

IV. Duties of Committee Officers

A. The Chairperson shall:
1. Chair Committee meetings.
2. Chair the Resources and Infrastructure Executive Committee to include the Chairperson and Vice Chairperson.
3. Vote only in the event of a tied vote of the community members of the Committee.
4. Coordinate input for agenda topics for the monthly Resources and Infrastructure meetings with CCSD staff.
5. Develop an Annual Calendar of Events that includes Resources and Infrastructure priorities, workshops as needed, and joint meetings with the CCSD Board of Directors.
6. Appoint ad hoc committees as needed.
7. Act as liaison to CCSD standing committees, and appoint representatives to act as liaison other committees.

B. The Vice Chairperson shall:
1. Perform the duties of the Chairperson in his or her absence.
2. Coordinate preparation of Resources and Infrastructure priorities with the Chairperson to be submitted to the CCSD staff.
3. Attend Executive Committee meetings as needed.

C. The Secretary shall:

1. Record the minutes of the meetings, ensuring the accuracy of when, how and by whom the Committee's business was conducted. Minutes are recorded in written form as well as by audio recording.

2. Include at a minimum: The date, time and location of the meeting; a list of the Committee members present and absent; a record of reports presented and by whom; the text of motions presented and description of any action taken; list of items being considered for future agenda; time of meeting adjournment. Minutes

Revised April 13, 2020

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should have enough information to enable absent Committee members, and the public, to understand what issues were discussed and the decisions made.

3. Submit the draft written minutes and audio recording to the CCSD staff for the record.

V. Agenda Procedure

A. Resources and Infrastructure Regular Meetings:

1. The Resources and Infrastructure Committee shall meet within the jurisdictional boundaries of the CCSD except in an emergency.

2. Members of the Committee shall provide input on the agenda to the Chairperson.

3. Chairperson and Vice Chair shall develop the draft agenda with the CCSD staff.

4. CCSD staff shall prepare the final agenda, attachments, and emails to all Resources and Infrastructure Committee members. Agendas are distributed to an agenda distribution list.

5. CCSD staff shall post agendas at the CCSD Administrative Office, Veteran's Memorial Hall, and the Cambria Public Library.

VI. Ad Hoc Committees

The Committee shall appoint Ad Hoc committees as may be deemed necessary or advisable. The duties of an Ad Hoc committee shall be outlined at the time of the appointment, and an Ad Hoc committee shall be considered dissolved when its final report has been made.

VII. Committee Procedures

A. The Committee will determine and publish a calendar of monthly meetings at their January meeting and will meet on that schedule unless otherwise publicly noticed 72 hours in advance. The Committee may call public-noticed special meetings as needed.

Deleted: shall

Deleted: meet as determined by the Committee in January

Deleted: on the third Tuesday of each month

B. A majority of the Committee members shall constitute a quorum.

C. All Committee meetings shall be conducted by laws governing open meetings and public participation.

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D. The CCSD Board shall appoint Staff liaison to the Committee for the purpose of improving the flow of communication between the entities.

E. The CCSD General Manager, or his/har designated representative(s), shall assist the Committee as Staff to the Committee.

F. After two consecutive unexcused absences of a committee member, the Committee, by a majority vote, may recommend to the CCSD Board the dismissal of said Committee member.

G. Should a Committee member disrupt Committee meetings, or participate in behavior contrary to the charges and responsibilities of the Committee, the Committee, by a majority vote, may recommend to the CCSD Board the removal of said Committee member.

H. Committee members desiring to resign shall submit a letter of resignation to the Committee Chairperson and this shall be forwarded to the CCSD Board.

I. Each committee member shall be appointed for a two-year term in concurrence with the CCSD Board of Director elections. Committee members shall be asked to declare their intent to continue service yearly. When committee members decide to terminate service the remaining committee members shall recommend community members to be voted on by the CCSD Board of Directors.

VIII. Parliamentary Authority

The rules contained in the current edition of ROBERT'S RULES OF ORDER, *Newly Revised,* shall govern the Committee in all cases to which they are applicable and in which they are not consistent with these Bylaws, any special rules of order the Committee may adopt and statutes applicable to this Committee that do not authorize the provisions of these laws to take precedence.

IX. Amendments to Bylaws

The Bylaws may be amended by majority vote at any regular meeting of the Committee provided that written notice of the proposed changes is mailed to each member of the Committee no less than one week in advance. Changes must be approved by the CCSD Board.

Resources & Infrastructure Committee
Cambria Water Demand Report – for Submittal to Urban Water Master Plan Update Consultant
May 11, 2020

I. Introduction and Summary

The Resources and Infrastructure Committee of the Cambria Community Services District has created an ad hoc committee to analyze water demand in Cambria and to assess the adequacy of current data for forecasting demand in the future. The following report is being presented by the three committee members – Karen Dean, Brad Fowles and Tom Gray – in response to this request.

This report is *not* intended to supersede the CCSD's Urban Water Management Plan, most recently updated in 2015 and due for its next update in 2020. What we attempt here is a close-up look at past and present patterns in water usage in Cambria, based on the data available at this point. We also seek to identify data gaps that need to be filled before a reasonably reliable forecast can be made.

Careful forecasting of water demand is critical to the CCSD as it decides how to provide a reliable water supply in all conditions, including extended droughts, for the community's residents. In light of potential future growth in water connections, it is especially important to have a clear picture of water use on a per-capita and per-connection basis. The CCSD needs to be able to estimate, for instance, what the addition of a certain number of connections and/or full-time residence would do to overall water demand.

Demand forecasting also needs to focus not just on annual totals but on demand in the dry half of the year, the months from May through October. This is the time when water use is highest and when shortfalls are likely to occur. For that reason, we break out usage data for the dry season, based on CCSD billing data since 2003.

Billed-use data,[1] while not precisely reflecting actual water use, is the best source we have at present to measure consumption and identify short-term trends. Water production records give a longer-term view, but they can vary widely from billed-use totals and thus need to be used with caution in forecasting. We have drawn on both of these sources for most of our analysis.

We also have used available Census data to analyze per-capita use. Here we have identified several challenges. First, much of the data, especially the most recent, comes from surveys with large margins of error. Second, Census data on housing units does not make distinctions, such as between full- and part-time residency, that are crucial to forecasting residential water use in Cambria. Finally, we are on the eve of a new decennial Census (in 2020) that may show a shift in demographic and housing trends that

will force us to reassess assumptions based on the Census numbers from 2000 and 2010, or on Census estimates since 2010 from survey results.

We identify a number of areas that need further analysis and/or current data. One is the CCSD's demand offset program, in which data has not been updated for several years. Others are the question of full vs. part-time residency rates, defining a worst-case demand scenario, the potential impact of accessory dwelling units (ADUs), demographic trends, future commercial water use, water usage trends in landscape irrigation, and the success of efforts to close the gap between production and billed use.

We view this report as a summary of what we know at present and what we need to find out before making credible statements about the future. Our aim is to help the CCSD develop a solid foundation of knowledge for demand forecasts such as those in the 2020 update of the Urban Water Management Plan.

II. Review of the Data

1) Cambria's Water Usage Today

In the latest full year (2019), CCSD customers of all types were billed for use of 477.0 acre-feet. Total water production was 530.4 acre-feet. The difference between production and billing was 53.4 acre-feet, or 10.1% of production.

Of the total billed water consumption, **residential** use accounted for **306.1 acre-feet**, or 64.2% of the total. **Commercial** use was **141.1 acre-feet**, or 29.6% of the total, with another 20.0 acre-feet (4.2%) consumed by licensed vacation rentals. Commercial and vacation-rental use came to 33.5% of the total. The remaining 9.8 acre-feet (2.1%) was billed to CCSD internal accounts.

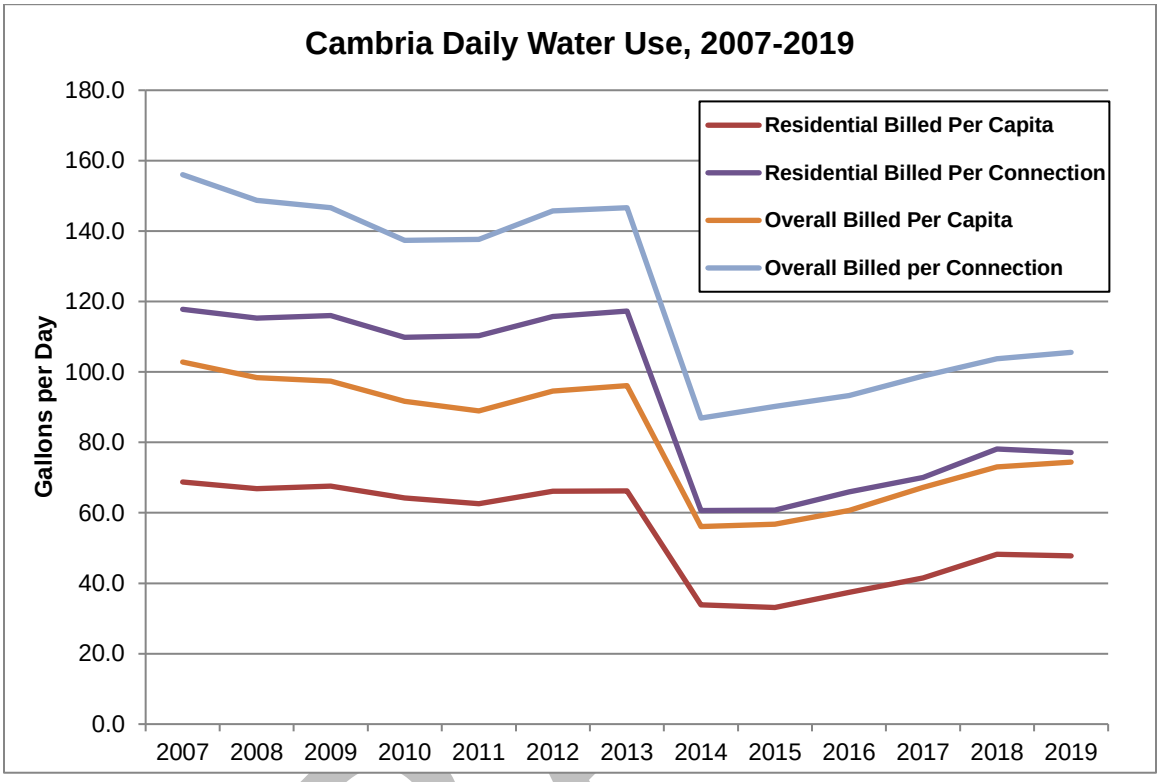
Two water-use figures -- per capita and per connection -- are especially important in forecasting

Per capita: Based on the most recent Census population estimate (2018) of 5,725,[2] per capita use for all categories in 2019 was 0.083 acre-feet (27,156 gallons) per year, or 74.4 gallons per day (gpd). Total *residential* per-capita use was .053 acre-feet per year, or 47.7 gpd.

Per connection: Based on a total of 4,034 connections (at mid-year), total billed use per connection was .118 acre-feet per year, or 105.6 gpd. Residential use alone (excluding commercial, vacation-rental and internal use categories) was .086 acre-feet a year per connection, or 77.2 gallons per day, based on 3,541 connections.

These per capita and per connection figures for 2019 are all significantly below pre-2013 levels, showing the dramatic effects of conservation efforts during the 2013-2016 drought They have showed a modest upturn after bottoming out in 2015, but they remain around

30% below 2013 levels (see Figure 1, which covers the 13 years for which the CCSD has separate billing records for residential customers).



(See also Table 1: Annual Billed Use by Category, 2007-2019)

Cambria's water use also is low compared to other communities in the Central Coast region, not to mention California as a whole. According to monthly data from the State Water Resources Control Board (https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/conservation_reporting.html), per capita residential water use on the Central Coast averaged 75.0 gpd in 2019. This is more than 57% above Cambria's 47.7 per capita gpd.

We have found no current data showing how much water *full-time* residents use on a per-capita basis. But we can infer that full-timers on average use somewhat less than the residential average of 47.7 gpd per capita, because the CCSD's "residential" category includes connections for part-time residents (who are not included in the total population figure of 5,725) as well as full-time residents.

The Census Bureau's 2018 American Community Survey classifies 34% of Cambria's housing units as "vacant." This includes active vacation rentals and units for sale or rent that are truly unoccupied, but it also includes the large number of units that are occupied part-time. How much water these units use depends on how often the part-time residents occupy them, and we have no information on the average length of stay. See "Questions for Forecasting" below for more on this topic.

As with residential water use throughout the state, Cambria's water use follows a clear seasonal pattern. From May through October, normally a time with little or no rain, residential use from 2007 through 2019, a period including both pre-drought and post-drought years, averaged 60.0 gpd per capita. (**See Table 2: May-Oct. Billed Use by Category, 2007-2019).** This is 11% above the 54.2 gpd per capita full-year average from the same 13-year period, and 24% above the November-April average of 48.3 gpd. The summer upsurge is likely due both to landscape irrigation in the dry season and more summer use of part-time residences. (See "What about the part-timers" below for more on the importance of determining the size and timing or part-time residency in Cambria).

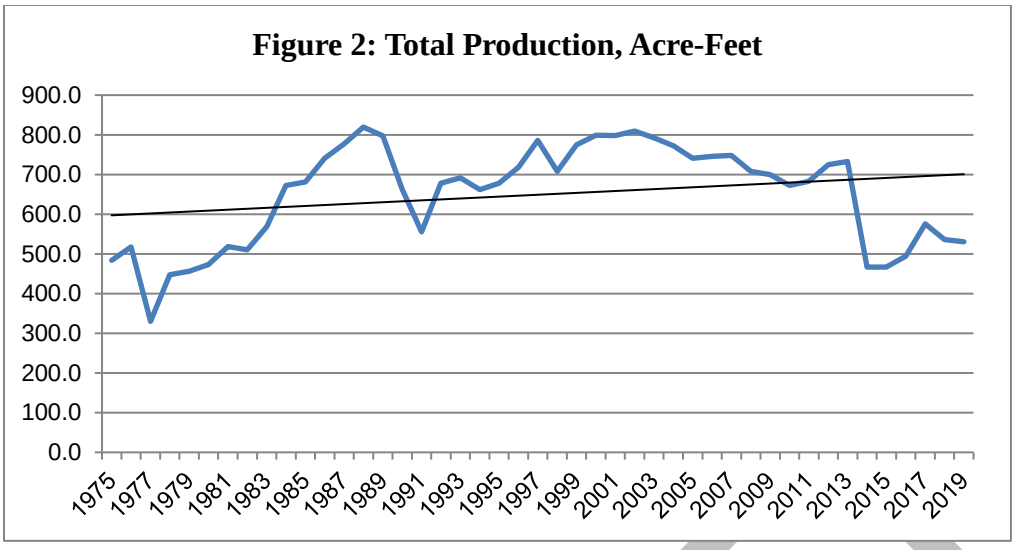
Commercial use shows a larger upsurge in the dry season. The rate per commercial connection -- 616.2 gpd in the May-to-October period – is 14% above the year-round average of 541.6 gpd and 35% above the November-April average of 457.2 gpd. The difference is presumably due mainly to higher tourism in the summer months.

2) A Longer View of Cambria's Water Usage

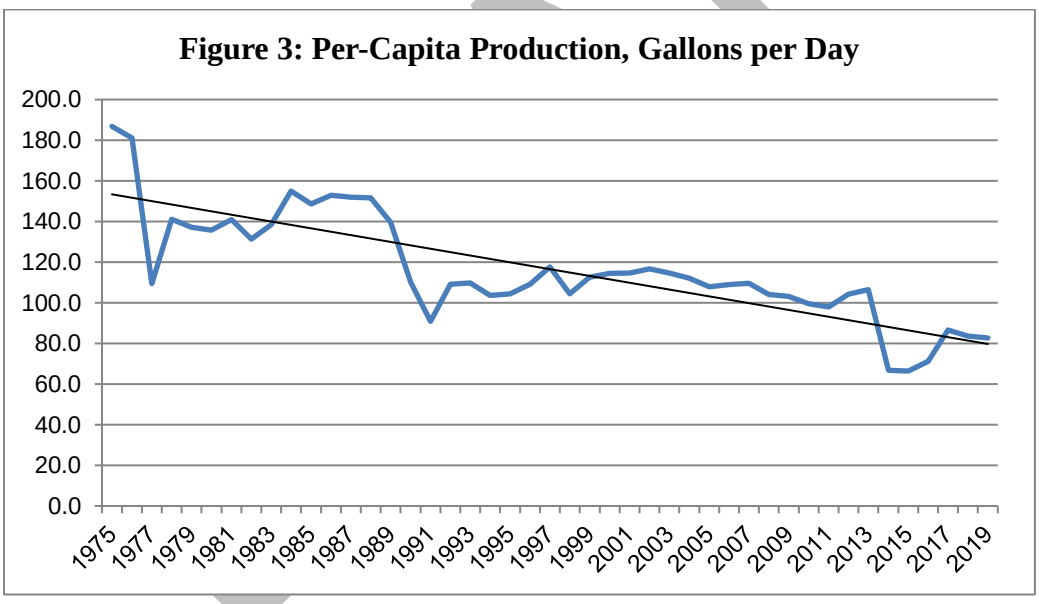
Looking at long-term trends, we have annual water production data covering 44 years, from 1975 through 2019. Billed use records cover 33 years, from 1988 to 2019. Per capita usage figures are available for both periods, and records for usage per connection (not categorized in earlier years) date to 1991. (**See Table 3: Historical Water Production and Billed Use: 1975-2019)**.

These data series show two patterns that are important in forecasting future use. One is a long-term decline in per capita or per-connection water use. The other is a sharp drop in water use during prolonged droughts, followed by a partial recovery.

In the earlier years of the production record (until about 2000), the decline in per capita use was masked by population gains, This is why total production from 1975 (see **Figure 2**) shows a gradual rise overall. Even here, though, the most recent production totals are comparable to those from about 35 years before, when Cambria's population was about two-thirds what it is now.



Per-capita production (Figure 3) shows a significant decline, even before the most recent drought. The chart also shows how water use fell dramatically in each of the three severe droughts in this period – in 1976-77, 1988-91, and 2013-2016 – and then retraced some, but not all, of the drop in demand.



Sources for long-term production and billing data: "A Review of Water Use & Water Management Alternatives in Cambria, California," by James Fryer, June 2012; CCSD billing and production records.

Based on the production records for the two earlier droughts, it appears that the full recovery of demand takes place over roughly seven years after demand bottoms out. From 1977 to 1984, for instance, per capita production went from 109.4 gpd to 155 gpd, after which it held steady and eventually fell. This 42% rise, however, retraced only about 59% of the drop during the drought. In other words, the drought led to a permanent reduction of demand, amounting to about 20% of pre-drought production.

The pattern is the same for the drought that started in 1988, with demand hitting a low point in 1991. Per capita production fell 40%; per capita billed use fell 42%. By 1997, demand and billed use had reached a new plateau and were starting a gradual decline. But this new high point was still about 22% below the pre-drought peak in 1988. Billed use peaked a few years later, in 2001, but was even then about 25% below 1988.

In the most recent drought, demand hit bottom in 2015, with per capita production falling 38%, from 106.4 gpd to 66.4 gpd. Residential per-capita use plummeted 50% from 66.2 gpd to 33.1 gpd. In 2019, per capita production had rebounded to 82.7 gpd, still 22% below the pre-drought peak. Per capita residential billed use, at 47.7 gpd, was 28% below the 2013 level for this category.

If the past pattern holds, we may see another year of recovering demand, though at a much slower pace than we saw after the drought was declared over and Stage 3 restrictions were lifted in 2017. The next peak, followed by a plateau or gradual decline, would occur in 2021 or 2022, and it would leave production and residential use at no more than 80% of prior peak levels. That would put per capita production at 85.1 gpd and per capita residential use at 53.0 gpd. In fact, per capita demand barely changed between 2018 and 2019, suggesting that the demand recovery phase may already have ended.

The dry-season demand pattern in the recent drought was more pronounced than the annual pattern, but its general shape was the same. From a 2013 level of 119.4 gpd, per capita production in the May-October period fell 43% to 67.7 gpd in 2014 and had rebounded to 90.6 gpd by 2019, still 24% below the prior peak. Per capita billed residential use fell 57% from 73.5 gpd in 2013 to 31.9 gpd in 2014. At 53.1 gpd in 2019, it was still 28% below 2013.

3) Water Rates and Other Conservation Factors

There are several possible reasons why per capita water use has declined over the years and tends to stay well below prior levels after a major drought.

One is behavior change. In a drought severe enough to warrant strict restrictions over a substantial period, people learn to use less water for daily activities and, up to a point, get used to more frugal practices such as shorter showers.

Another factor is replacement of high water-using appliances or landscaping with more water-thrifty alternatives such as low-flow toilets, more efficient washing machines and drought-tolerant trees, shrubs and ground cover.

A third possibly significant factor is the rising cost of water. In Cambria, water and sewer fees are combined in a single bimonthly charge based on water consumption. This charge has more than doubled since before the latest drought, and it is due for a further increase in 2020.

For a household consuming six units (600 cubic feet or 4,488 gallons) of water every two months, the marginal cost – that is, the cost of one additional unit -- has gone from $7.99 in 2012 to $20.37 today, an increase of 155%. It is due to rise further to $22.01 in 2020.

What this means is that, whereas a typical CCSD customer saved just under $8 (every two months) by reducing use by one unit seven years ago, the same customer saves $20.37 (or $122.22 a year) from the same cut in consumption. This is an especially significant amount of money for people living on modest incomes.

III. Questions for Forecasting

1) Will demographic factors change?

Census data from the past two decades (from the American Community Survey reports as well as the decennial Census) tell a consistent story about Cambria. Its population is significantly older than the state average, with a median age estimated at 61.7 in the 2018 American Community Survey. The statewide median in that same survey is 36.7. Its economy is based mainly on tourism; 57% of its workforce, according to a 2012 Census survey, is employed in "accommodation and food services." To put this data in simple terms, retirees and near-retirees are the dominant group among Cambria's residents, and visitors provide a living to most of its workers.

The future of these demographic factors has important implications for forecasting water demand. For instance, a shift toward lower median ages might point toward a rise in younger, larger households, replacing retiree households with one or two occupants. This would lead to a higher occupancy rate per residential water connection, and higher water consumption as a result.

2) What about the part-timers?

As we noted above, the 2018 American Community Survey records 34% of Cambria's housing units as "vacant," up from 25% in the 2000 Census. This is a broad category that includes units occupied part-time, as well as those used as vacation rentals, awaiting rental or sale, and simply empty.

What is not known from Census data is how much of the overall residential water demand comes from part-timers. This is a significant gap in the knowledge needed for forecasting. Currently, in calculating per-capita demand we have only 1) the population of Cambria (i.e., full-timers) and 2) the number of residential water connections. But a significant number of those water connections are used by part-timers, who are not included in the population figure. So per-capita demand is overstated to some degree.

This is not a problem if we assume that the mix of full-time and part-time occupancies will not change in the future. But change in either direction could make a major difference in future water use (see "What is the worst-case demand scenario" below).

By our estimate based on the 2018 American Community Survey and the 2010 Census, just over 20% of all housing units are occupied part-time.[3] However, the share of water *consumption* by these homes is impossible to estimate without knowing more about the part-time residents – such as how many there are, how much time they spend in Cambria and when (i.e. which season) they are mostly likely to be here.

3) What is the worst-case demand scenario?

Extrapolating from the present paints a reassuring picture. If current trends continue in population, housing occupancy and water consumption, Cambria's water demand will remain well within its available supply (except possibly in severe droughts). Assuming no change in consumption per connection on in the ratio of full-time to part-time occupancy, Cambria's billed residential water use would rise to 402 acre-feet at full build-out of 4,650 connections (the limit in the North Coast Area Plan and the Local Coastal Program). If residential use continues to take up its current share of overall use (64%), total use would be 623 acre-feet. Given the average production-to-billed use gap, the required production would be about 700 acre-feet.

However, a responsible long-term plan needs to include other scenarios that are within the realm of possibility. For instance, the trend of the past two decades toward more part-time and less full full-time residency could reverse for any number of demographic or economic reasons. Most of the housing units labeled "vacant" now can *potentially* be occupied full-time. The same is true for units to be built in the future. Also, there is no guarantee that the current average household size will remain at its current estimated level of 2.08 (per the 2018 ACS).

One candidate for a worst-case scenario would be a situation in which *all* residential units are occupied full time. Water use would be significantly greater than now, even without new connections. But without solid data on water use by part-timers, we do not know how big the increase would be. There are other wild cards to consider, such as changes in future household size, per capita water use and commercial activity. The only firm number we have is the effect of full build-out the residential user base, which would would rise by 31% (from 3,541 to 4,650).

4) Now will ADUs affect demand?

The encouragement by state and local governments of accessory dwelling units (ADUs) as a form of affordable housing adds an element of uncertainty to future demand calculations. These units are small structures added to existing residential parcels to provide additional full-time housing units. The most recent land-use update, enacted by the San Luis Obispo County Board of Supervisors on Jan. 28, 2020, does not specifically address the question of whether an ADU would require an additional water connection. Guidance from the County Department of Building and Planning[4] regarding state law on ADUs states that any new unit will require a will-serve letter from the local water purveyor, such as the CCSD. However, it is not clear at this time if an additional water *connection* would be required.

ADUs added to existing water connections (or added to future water connections for a conventional single-family home) could significantly increase the number of users per connection and hence the per-connection demand. The CCSD needs to get as clear a picture as possible of how many ADUs might ultimately be built and how this would affect its demand forecasts.

5) How much of a difference will demand offsets make?

In past forecasting, the CCSD has said that conservation measures could actually lower overall water demand even under full build-out (4,650 residential units). These would include retrofitting of existing construction as well as added requirements (such as dual plumbing and no outdoor use of potable water) on new construction.[5]

To put this assertion to the test, the CCSD needs to know how well its conservation programs have worked up to now, and to know how much potential they have to save water in the future. In existing construction, for instance, future savings through demand offsets depend on how much older, less efficient plumbing fixtures and appliances remain in use. In new construction as well as old, the CCSD needs to consider the uncertainties surrounding technologies, such as the use of gray water for residential irrigation, that have not been widely adopted and do not have an extensive track record of reliability. The first step toward ascertaining Cambria's conservation potential is to update the data and projection in the CCSD's demand-offset programs.

6) How much potable water will be used for landscape irrigation?

We can assume that much of the demand drop in the recent drought came from residents cutting back on outdoor irrigation, as well as a significant number of them buying irrigation water from non-CCSD sources. The future trend is less clear. For instance, it is possible that many of the residents now buying non-potable water will switch to the potable CCSD water, which is still the cheaper option. On the other side of the ledger, changes in landscaping, such as a shift to drought-tolerant plantings, may hold demand down for the long term.

To get a better idea of how much these trends might affect future demand, the CCSD needs to get a clearer idea of how much potable water is used for landscaping now. It might start by comparing water usage with wastewater production during different billing periods of the year.

7) Will commercial maintain its share of the total?

Billed water use in the commercial category, which includes visitor-serving lodging and restaurant businesses as well as businesses that primarily serve residents, was 29.6% in the latest full year (2019). With vacation rentals added, the share of total use came to 33.8%. These are higher figures than those from the pre-drought years, when commercial

use averaged 23.4% (from 2003 to 2013) and commercial plus vacation rentals averaged 28.1% (from 2007, the first year vacation rentals were a separate billing category).

This shift toward a bigger commercial-plus-vacation-rental share appears to be the result of differences in residential and commercial conservation rates during and after the drought. From 2013 to 2015, when water use bottomed out in both categories, residential use fall nearly 49%, from 456 to 232.9 acre-feet, while commercial use fell less than 27%, from 154.3 to 113.1 acre-feet. Vacation rental use dropped by 38%, from 32.8 to 20.2 acre-feet. Since then, however, the conservation gap has closed somewhat. From 2015 to 2019, residential use bounced 31% off its 2015 low, while commercial use rose 25% and vacation rental use actually declined by 1%.

For now, the ratio of commercial to residential use (with vacation rentals added to the commercial category) seems to be settling back to pre-drought levels. But what will happen to this number if Cambria adds a substantial number of new housing connections? The answer seems to depend on the amount and type of new business in Cambria. New visitor-facing development, especially lodging, could increase commercial use substantially; new retail business probably would increase it less.

8) Will the production/usage gap shrink?

In forecasting production, the most difficult number to pin down is the annual gap between water produced and water use billed. In the past 31 years, this gap has ranged from as high as 140.2 to as low as 38.6 acre-feet. The average production-billed use gap in the past 13 years is 64.8 acre-feet per year. But even in that short period the annual number has ranged from 38.6 to 129.2 acre-feet. To put those numbers in perspective, the 2007-2019 average billed water use per residential connection was just 0.105 acre-feet a year. So a reduction of 10 acre-feet in water loss is equivalent to the water used by nearly 96 homes. (And this is based on an average including both pre- and post-drought years).

The year-to-year variation does not correlate clearly to demand. This suggests that the production-consumption gap may largely be due to leakage which in a pressurized system will occur whether or not people open their taps. However, the age and condition of water meters also can be a significant factor, with older meters tending to err on the down side. CCSD staff has estimated[6] that water meter accuracy degrades by 4% to 7% over 10 years. In that case, a system where the average age of water meters is 10 years could be under-reporting consumption by up to 7%.

We assume that the CCSD will continue its efforts to reduce water losses, both by detection and repair of leaks and replacement of older water meters. How well it succeeds could have a major effect on forecasting its ability to meet new demand.

Table 1: Annual Billed Use by Category, 2007-2019

	Residential				Vacation Rental			Commercial		
Year	(A)	Billed Use (AF)	(B)	Billed Use, GPD per Capita	(A)	Billed Use (AF)	(B)	(A)	Billed Use (AF)	(B)
2007	3555	469.0	117.8	68.7	225	31.0	122.8	223	158.5	634.4
2008	3523	454.8	115.3	66.9	251	32.1	114.3	226	150.2	593.2
2009	3526	458.4	116.1	67.6	242	33.5	123.4	227	145.7	573.1
2010	3528	433.9	109.8	64.2	241	31.5	116.7	228	144.3	565.1
2011	3535	436.6	110.2	62.6	246	30.0	108.8	229	147.3	574.2
2012	3545	459.5	115.7	66.1	236	30.5	115.4	229	150.9	588.1
2013	3471	456.0	117.3	66.2	308	32.8	95.1	229	154.3	601.3
2014	3489	237.0	60.6	33.9	291	22.0	67.5	229	119.1	464.3
2015	3423	232.9	60.7	33.1	278	20.2	64.9	229	113.1	440.8
2016	3513	259.6	66.0	37.4	267	21.4	72.6	229	119.2	464.8
2017	3515	275.8	70.0	41.5	266	22.6	75.8	228	123.2	482.5
2018	3531	309.0	78.1	48.2	249	22.3	80.0	228	129.3	506.2
2019	3541	306.1	77.2	47.7	240	20.0	74.5	228	141.1	552.4
13-YEAR AVERAGES	*3515*	*368.4*	*93.4*	*54.2*	*257*	*26.9*	*94.7*	*228*	*138.2*	*541.6*

Table 2: Dry Season (May-Oct.) Billed Use by Category, 2007-2019

	Residential				Vacation Rental			Commercial		
	(A)	Billed Use (AF)	(B)	Billed Use, GPD per Capita	(A)	Billed Use (AF)	(B)	(A)	Billed Use (AF)	(B)
2007	3555	266.9	133.0	77.6	225	17.4	136.7	223	91.9	729.7
2008	3523	257.2	129.3	75.0	251	19.4	138.0	226	88.9	696.9
2009	3526	256.6	128.9	75.1	242	19.6	144.2	227	85.1	664.0
2010	3528	250.5	125.7	73.5	241	19.0	140.6	228	85.9	667.0
2011	3535	246.1	123.3	72.3	246	17.5	126.8	229	87.8	678.9
2012	3545	261.0	130.4	76.6	236	18.0	135.8	229	90.5	699.9
2013	3471	255.4	130.3	75.0	308	22.1	128.1	229	93.2	720.7
2014	3489	112.6	57.1	33.0	291	11.3	69.3	229	61.7	477.2
2015	3423	119.4	61.8	35.1	278	11.3	72.6	229	60.9	471.0
2016	3513	139.9	70.5	41.1	267	12.5	83.7	229	65.1	503.5
2017	3515	162.4	81.8	47.7	266	13.6	91.0	228	68.3	530.3
2018	3531	171.2	85.9	50.3	249	12.7	90.8	228	74.1	575.6
2019	3541	171.6	85.8	50.4	240	11.8	87.6	228	76.7	595.8
13-YEAR AVERAGES	*3515*	*205.4*	*103.4*	*60.0*	*257*	*15.8*	*111.2*	*228*	*79.2*	*616.2*

Notes to Tables 1 and 2 --

(A): Connections at mid-year (May-June billing period) except Sept.-Oct. in 2017
(B): Billed use, GPD per Connection
GPD: Gallons per day
AF: Acre-feet
CCSD internal accounts not included

Table 3: Historical Water Production and Billed Use, 1975-2019

	Production	Billed Use	Production Minus Billed Use	Production Minus Billed Use (% of Production)	Population	GPCD* Production	GPCD* Billed Use
1975	483.4				2310	186.8	
1976	517.8				2552	181.1	
1977	330.0				2692	109.4	
1978	447.5				2831	141.1	
1979	456.4				2971	137.1	
1980	473.1				3110	135.8	
1981	518.5				3285	140.9	
1982	510.6				3471	131.3	
1983	568.4				3666	138.4	
1984	672.4				3873	155.0	
1985	681.0				4091	148.6	
1986	740.6				4322	153.0	
1987	777.0				4566	151.9	
1988	819.5	725.3	94.2	11.49%	4823	151.7	134.3
1989	797.0	715.9	81.1	10.18%	5095	139.6	125.4
1990	663.8	586.8	77.0	11.60%	5382	110.1	97.3
1991	555.7	473.2	82.5	14.85%	5462	90.8	77.3
1992	677.7	537.5	140.2	20.69%	5543	109.1	86.6
1993	691.4	570.4	121.0	17.50%	5625	109.7	90.5
1994	662.1	597.7	64.4	9.73%	5708	103.6	93.5
1995	677.8	601.0	76.8	11.34%	5792	104.5	92.6
1996	718.3	642.8	75.5	10.50%	5878	109.1	97.6
1997	785.8	646.0	139.8	17.79%	5965	117.6	96.7
1998	707.5	614.3	93.2	13.17%	6053	104.3	90.6
1999	774.6	668.5	106.1	13.70%	6142	112.6	97.2
2000	798.8	687.2	111.6	13.97%	6232	114.4	98.4
2001	797.9	693.2	104.7	13.13%	6212	114.7	99.6
2002	809.5	700.1	109.4	13.51%	6191	116.7	101.0
2003	792.9	698.5	94.4	11.90%	6171	114.7	101.1
2004	772.6	659.4	113.2	14.66%	6151	112.1	95.7
2005	741.2	643.7	97.5	13.15%	6131	107.9	93.7
2006	746.1	688.3	57.8	7.75%	6111	109.0	100.6
2007	748.2	701.5	46.7	6.24%	6091	109.7	102.8
2008	707.6	669.0	38.6	5.46%	6071	104.1	98.4
2009	699.5	660.5	39.0	5.57%	6052	103.2	97.4
2010	672.4	619.1	53.3	7.93%	6032	99.5	91.6
2011	682.9	620.7	62.2	9.11%	6229	97.9	89.0
2012	724.7	657.4	67.4	9.29%	6204	104.3	94.6
2013	733.1	662.2	70.9	9.67%	6150	106.4	96.1
2014	466.8	392.5	74.2	15.91%	6246	66.7	56.1
2015	467.0	399.5	67.5	14.46%	6279	66.4	56.8
2016	494.3	421.4	72.9	14.74%	6198	71.2	60.7
2017	575.7	446.6	129.2	22.43%	5934	86.6	67.2
2018	535.9	468.5	67.5	12.59%	5725	83.6	73.0
2019	530.4	477.0	53.4	10.07%	5725*	82.7	74.4

GPCD: Gallons per capita per day
*Latest ACS estimate is for 2018

Sources: CCSD for billed use and production (after 1987); "A Review of Water Use & Water Management Alternatives in Cambria, California" by James Fryer (2012) for production through 1987 and population estimates through 2009; 2010 Census and American Community Survey (ACS) estimates for population from 2010 to present.

The Fryer report compiled totals for annual water production and annual billed water use from annual Public Water System Statistics report filed with the California Department of Water Resources for the years these reports were available.
Endnote 10 in the report (Appendix A, VII) adds: "Some years, including 2005, utilized data from the 2010 Urban Water Management Plan. Annual production from 1975 through 1987 is from CCSD's 1994 Environmental Impact Report, Table 2, p. 3-8. The total number of connections for each year from CCSD's Public Water System Statistics reports when available, and for some of the earlier years from a CCSD Memo from Tammy Rudock to the California Coastal Commission, May 11, 2005, as part of the Pine Knolls Water Tanks Appeal Number A-3-SLO-05-017, Exhibit S, page 6 of 13. The population is from the U.S. census Bureau and averaged for years in between 1970, 1980, 1990, 2000 and 2010. The GPCD for each year is derived from the total annual production and the population."

Notes:

[1] "Billed use" in this report refers to all metered water consumption, including water for CCSD internal use that is not revenue producing. Also, metered amounts can vary from actual use due to factors such as meter inaccuracy

[2] The post-2010 population figures used in this report are annual estimates of the American Community Survey (ACS), based on a five-year average of survey results. Because the 2019 ACS estimates were not available at the time of this report, we used the 2018 figures to calculate per-capita use for 2019. The ACS estimates had a 6% margin of error in 2018.

[3]According to the 2018 American Community Survey, 1,438 out of a total of 4,196 housing units are "vacant." The 2018 ACS does not provide further detail on these units, but the 2010 Decennial Census breaks down the total at that time-- 1,300 in that year -- into different categories. The largest of these – at 1,058, or 81% of the total -- is "for seasonal, recreational or occasional use." This would include both part-time residences and vacation rentals. If the same percentage applies in 2018, about 1,170 units would be in this category. Excluding the 240 units listed by the CCSD as vacation rentals in 2019, there would have been 930 part-time residential units in 2018.
Note that "housing units" as defined by the Census include multiple units on single water connections, as in multi-family housing or secondary dwellings, For that reason, the Census total is larger than the combined CCSD totals for vacation rentals and residential connections.

[4]See https://www.slocounty.ca.gov/Departments/Planning-Building/Housing/Housing-Forms-Documents/Informational-Documents/ADU-Guide-State-Regs.aspx

[5]See, for instance, the CCSD's 2015 Urban Water Master Plan update, pp. 25, 72-75

[6]Email communication from CCSD General Manger John Weigold to Ad Hoc Committee Member Karen Dean, May 5, 2020.

List of Data Sources:

Cambria Community Services District:

1) Monthly water production records from 1988; published monthly in CCSD Board meeting agendas (for latest, see Agenda for Sept. 19, 2019, p. 29: https://www.cambriacsd.org/files/a8b1e2c48/2019+09+19+Amended+2+Regular+Meeting+Agenda+Packet+Posted.pdf

2) Bi-monthly utility summary billing pages from 2003. Data is available online from 2012 to present on "District Financial Information" page at https://www.cambriacsd.org/district-

financial-information; earlier reports were provided on request by the CCSD. We would especially like to thank Pamela Duffield for her help in this area.

U.S. Census Bureau:

1) Decennial 2000 Census: "Profile of General Demographic Characteristics, 2000," and "General Housing Characteristics, 2000."

2) Decennial 2010 Census: "Profile of General Demographic and Housing Characteristics, 2010," and "General Housing Characteristics, 2010."

3) "Selected Housing Characteristics" (2014-2018 American Community Survey 5-year Estimates).

4) "Selected Housing Characteristics" (2006-2010 American Community Survey 5-year Estimates).

5) "Economy-Wide Key Statistics, 2012" for Cambria CDP (from Economic Census).

The above tables are available online at the Census website, accessed by searching "Cambria CDP" at https://data.census.gov/cedsci/.

James Fryer, "); "A Review of Water Use & Water Management Alternatives in Cambria, California, " (2012):

Production totals from 1975 through 1987; billed water use totals from 1988 through 2002; population estimates through 2009.
Fryer's report can be retrieved online at the Greenspace website:
https://img1.wsimg.com/blobby/go/150659eb-035a-44f6-8264-ba16acbf6362/downloads/1c4kut79q_530345.pdf?ver=1569870767926