WICC
Watershed Information Center & Conservancy
of Napa County

804 First Street,
Napa, CA
94559-2623

Tel: 707-259-8600

info@napawatersheds.org

AGENDA

SPECIAL BOARD MEETING

Thursday, May 22, 2014, 4:00 p.m.

Markham Vineyards
2812 St. Helena Hwy North, St. Helena, CA

- *NOTE SPECIAL LOCATION* -

1. **CALL TO ORDER & ROLL CALL** (Chair)
Welcome to **Tosha Comendant**, newly appointed Public at Large member, followed by roundtable of introductions by the Board.

2. **APPROVAL OF ACTION MINUTES**
Meeting of March 27, 2014 (Chair) *(2 min)*

3. **PUBLIC COMMENT**
In this time period, anyone may comment to the Board regarding any subject over which the Board has jurisdiction, or request consideration to place an item on a future Agenda. No comments will be allowed involving any subject matter that is scheduled for discussion as part of this Agenda. Individuals will be limited to a three-minute presentation. No action will be taken by the Board as a result of any item presented at this time. (Chair)

4. **UPDATES, REPORTS AND DISCUSSION**

a) Report on **May 2014 Watershed Awareness Month** events and activities (WICC Staff; Frances Knapczyk, Napa Co. Resource Conservation Dist.) *(10 min)*

b) Report on Napa County **Groundwater Resources Advisory Committee's** (GRAC) presentation and final report to Napa Co. Board of Supervisors (WICC Staff) *(5 min)*

c) Update on **Napa County water supplies**, status of drought conditions and drought preparedness planning (Phil Miller, Napa Co. Flood Control and Water Conservation Dist.) *(10 min)*

d) Update on **Integrated Regional Water Management Planning** (IRWMP), 2014 expedited drought solicitation, regional and sub-regional project submittals, and other grant and funding updates (WICC Staff) *(5 min)*

(cont.)

e) Report on **MCE Clean Energy program** and analysis to potentially expand into the unincorporated areas of Napa County to offer residences and businesses cleaner energy options (WICC Staff) *(10 min)*

f) Report on pending **AB 2193 Habitat Restoration and Enhancement Act** intended to streamline the permitting of small-scale environmental restoration projects (WICC Staff) *(5 min)*

g) Other reports and updates (WICC Staff, Board)

5. **UPDATE AND DISCUSSION**
Discussion on **WICC Strategic Plan Update** and input on planning topics, schedule and meeting dates (WICC Staff, Board) *(10 min)*

6. **PRESENTATIONS AND DISCUSSION**

a) Presentation on **Evaluating Groundwater and Surface Water Resources: Benefits of an Integrated Approach for Napa County**, an overview of Napa County's MikeSHE integrated water resources model, potential refinements and application to better understand water resources throughout the County (Bob Prucha and Jesper Kjelds, DHI-US Water & Environment) *(20 min)*

b) Presentation on the potential of **truffle cultivation as a salmon-friendly crop**, a carbon sink to mitigate climate impacts and a financial incentive for the restoration of riparian vegetation that provides wildlife migration corridors, stream bank stabilization, and other ecosystem benefits. The presentation will provide an overview of existing case studies where truffles are generating financial returns beneath trees either planted or set aside for the benefit of the natural environment and explores a range of possibilities for further research. (Charles Lefevre, President, New World Truffieres) *(20 min)*

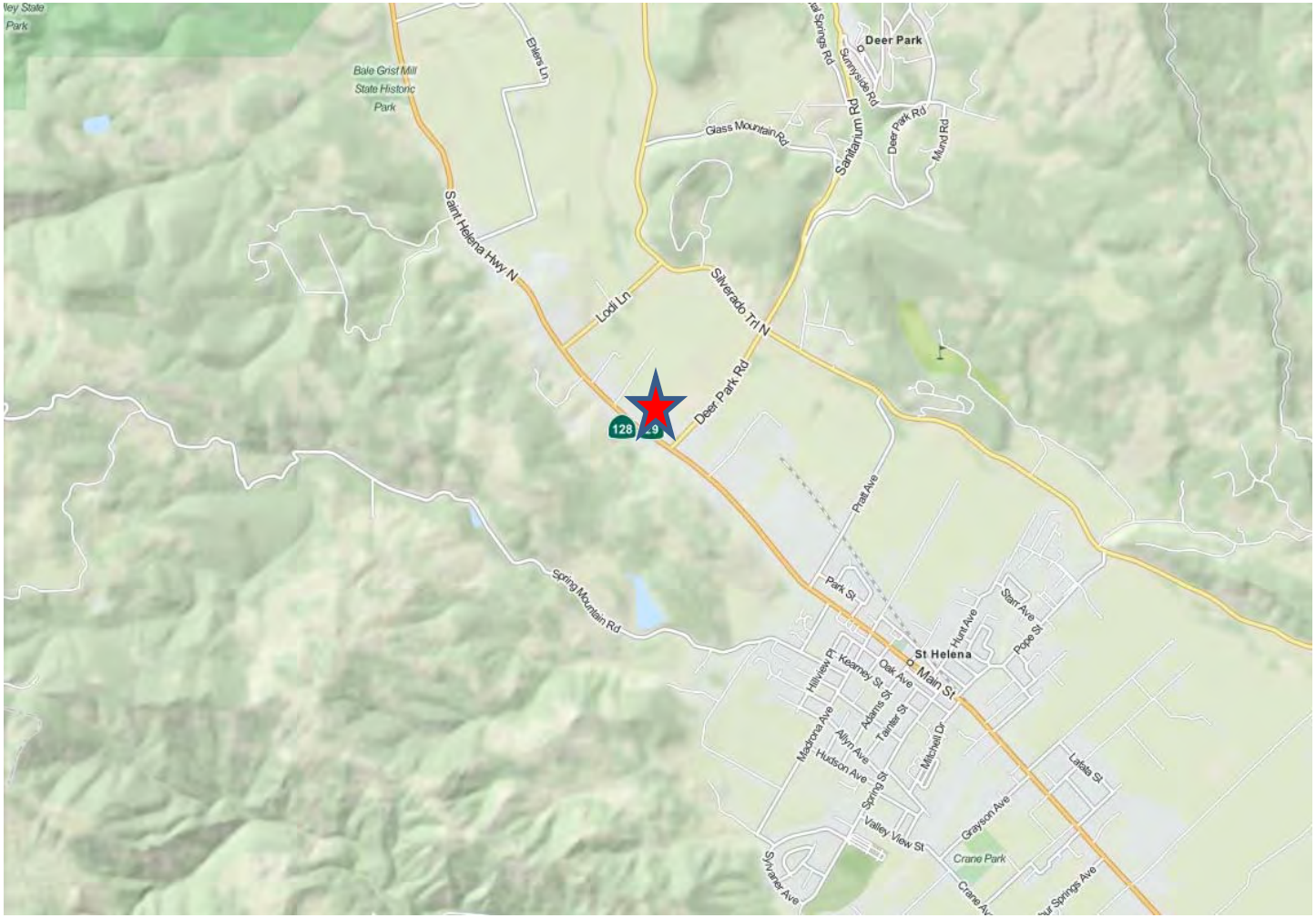
7. **INFORMATIONAL ANNOUNCEMENTS**
Exchange of **informational announcements and events** (WICC Staff, Board, and Public) *(10 min)*

8. **FUTURE AGENDA ITEMS**
Discussion of possible **items for future agendas** (Board, WICC Staff) *(5 min)*
- Report on WICC supported watershed education programs and events
- Presentation on North Bay climate change research and modeling

9. **NEXT MEETING** (Chair)
Regularly Scheduled Board Meeting: **July 24, 2014 – 4:00 p.m.**

10. **ADJOURNMENT** (Chair)

Note: If requested, the agenda and documents in the agenda packet shall be made available in appropriate alternative formats to persons with a disability. Please contact Jeff Sharp at 707-259-5936, 804 First St., Napa CA 94559-2623.



<u>Special WICC Board Meeting Location</u>

Markham Vineyards

2812 St. Helena Hwy North, St. Helena, CA (707) 963.5292

Corner of Hwy 29/128 and Deer Park Rd.

Proclamation

A Tradition of Stewardship
A Commitment to Service

THE BOARD OF SUPERVISORS | NAPA COUNTY, CALIFORNIA

WATERSHED AWARENESS MONTH – May 2014

WHEREAS, Napa County's three major watersheds: the Napa River, Putah Creek, and Suisun Creek watersheds support forests, agriculture, urban areas, grasslands, industry, and marshes; and

WHEREAS, Napa County's watersheds also support a large diversity of wildlife and plant species; and

WHEREAS, the beauty the County's watershed lands enrich the quality of life shared and enjoyed by each and every resident and visitor of the County; and

WHEREAS, functioning watersheds are vital for a healthy environment, a safe and reliable source of drinking water, and a healthy economy; and

WHEREAS, landowners, local governments, conservation organizations, and individual citizens throughout Napa County are working together to find ways to maintain, enhance, and improve the health of the County's watersheds; and

WHEREAS, the residents of Napa County wish to celebrate local watershed efforts and raise awareness about the importance of local watersheds.

NOW, THEREFORE, I, Mark Luce, on behalf of the Napa County Board of Supervisors do hereby proclaim the month of May 2014, as *"Watershed Awareness Month"* in Napa County and encourage all to celebrate and explore Napa County's watershed lands.

Chairman Mark Luce

NAPA COUNTY BOARD OF SUPERVISORS

Discover your watershed in May

Watershed Open House

Sunday May 18
10 am - 1 pm

MAY WATERSHED AWARENESS month

Calendar of activities at www.napawatersheds.org

Visit one or more of these 6 sites to learn about your watershed, your home:

Lake Hennessey Treatment Plant
Providing Water to Napa
Tours at 10:30 am and 12 pm, display
1000 Sage Canyon Road

Napa River Fish Monitoring Trap
How Healthy is the River?
View trap with RCD Fisheries Biologist
2350 Big Ranch Rd (Site is open to public only during Open House)

Napa Creek
Protecting Property and Habitat Downtown
Tour restoration with Flood District Ecologist
Meet on N side of Pearl St,
1/2 block west of Main St, Napa

Napa River
Sustaining Fisheries & Farms
Tour restoration with Project Engineer
Sequoia Grove, 8338 St Helena Hwy,
Rutherford, take SG driveway east to River

Napa Sanitation District
Recycling Napa's Wastewater
Tours at 10 am, 11 am, and 12 pm, display
NSD,1515 Soscol Ferry Rd, Napa

Napa-Sonoma Marsh
From Salt Ponds to Bird Sanctuary
Tours on-demand, display, bird watching
Huichica Creek Parking Area,
end of Buchli Station Rd, Napa

Watershed Information Center & Conservancy WICC

Most tours involve easy walking and last 45 minutes to one hour.
For more details visit www.napawatersheds.org

NAPA COUNTY RCD Resource Conservation District

A Tradition of Stewardship
A Commitment to Service

Agenda Date: 4/8/2014
Agenda Placement: 9B
Set Time: 9:55 AM
Estimated Report Time: 45 Minutes

NAPA COUNTY BOARD OF SUPERVISORS
Board Agenda Letter

TO:	Board of Supervisors
FROM:	Steven Lederer - Director of Public Works Public Works
REPORT BY:	Patrick Lowe, NATURAL RESOURCES CONSERVATION MGR - 259-5937
SUBJECT:	Final Update on the Conclusions and Recommendations of the Groundwater Resources Advisory Committee (GRAC)

RECOMMENDATION

Director of Public Works requests the following:

1. Accept a final report from the Chairman of the Groundwater Resources Advisory Committee (GRAC) Peter McCrea and Committee Member Jim Verhey on the conclusions and recommendations of the GRAC; and
2. Discussion and possible direction to staff.

EXECUTIVE SUMMARY

Chairman Peter McCrea and Committee Member Jim Verhey will provide a final update on the Conclusions and Recommendations of the Groundwater Resources Advisory Committee (GRAC), including Groundwater Sustainability Objectives, Groundwater Monitoring Plan and Expanded Well Monitoring Program; Water Availability Analysis/Groundwater Ordinance Updates, and Education/Outreach. This report was prepared by the Groundwater Resources Advisory Committee (except where noted).

PROCEDURAL REQUIREMENTS

1. Committee and staff reports.
2. Motion, second, discussion and vote to accept and file the committee's report
3. Direction to staff, if needed

FISCAL IMPACT

Is there a Fiscal Impact? No

ENVIRONMENTAL IMPACT

ENVIRONMENTAL DETERMINATION: The proposed action is not a project as defined by 14 California Code of Regulations 15378 (State CEQA Guidelines) and therefore CEQA is not applicable.

BACKGROUND AND DISCUSSION

Report from the GRAC

In 2009 Napa County began a comprehensive study of its groundwater resources to meet identified action items in the County's 2008 General Plan update. The study, by Luhdorff and Scalmanini Consulting Engineers (LSCE), emphasized developing a sound understanding of groundwater conditions and implementing an expanded groundwater monitoring and data management program as a foundation for integrated water resources planning and dissemination of water resources information.

On February 14, 2011 the Board of Supervisors held a Groundwater Workshop and heard presentations and recommendations derived from the consultant studies: Napa County Comprehensive Groundwater Monitoring Program (LSCE-February 2011) and Assessment of the Feasibility of a Collaborative Groundwater Data Gathering Effort in Napa County (Center for Collaborative Policy, CSUS-August 2010). Both studies identified the need for collaborative data gathering and suggested the establishment of a community advisory committee to guide the synthesis of existing information, and the collection and analysis of additional data. Following Board direction and staff/consultant recommendations from the workshop, a draft purpose and composition for a Groundwater Resources Advisory Committee was developed and endorsed by the Watershed Information Center and Conservancy (WICC) Board on May 26, 2011.

On June 28, 2011 the Board of Supervisors adopted a resolution to establish a Groundwater Resources Advisory Committee (GRAC), and an outreach effort for applicants began. On September 20, 2011 the Board of Supervisors appointed 15 residents to the Groundwater Resources Advisory Committee (GRAC), and the GRAC held its first organizational meeting on October 27, 2011. The members represent diverse interests, including environmental, agricultural, development and community interests.

The GRAC was created to assist County staff and technical consultants with recommendations regarding:

- Synthesis of existing information and identification of critical data needs;
- Development and implementation of an ongoing non-regulatory groundwater monitoring program;
- Development of revised well pump test protocols and related revisions to the County's groundwater ordinance;
- Conceptualization of hydrogeologic conditions in various areas of the County and an assessment of groundwater resources as data becomes available;
- Development of groundwater sustainability objectives that can be achieved through voluntary means and incentives; and
- Building community support for these activities and next steps.

GRAC ACTIONS

From January 2012 until January 2013, the GRAC reviewed and provided feedback on consecutive draft chapters of a proposed voluntary Groundwater Monitoring Plan, the centerpiece of its work to that date. The proposed Plan included a characterization of current groundwater conditions in sub-areas of the County, refinement of criteria used to identify priority monitoring areas, and a proposed expanded monitoring network. The groundwater monitoring program relies on both publicly-owned and volunteered private wells. To fulfill its mission and garner community interest and support, the GRAC developed a Communication and Education Plan, designed to implement the Groundwater Monitoring Plan through voluntary participation. This effort included the development of an outreach brochure and a series of fact sheets on specific topics.

A status update and materials developed by the GRAC and its consultants pertaining to the above were presented to the Napa County Board of Supervisors on April 2, 2013.

Following the Board's interim endorsement of the GRAC's efforts, the GRAC has undertaken the following steps:

- Provided updates to agriculture industry groups, environmental organizations and others;
- Led and supported outreach efforts to well owners for volunteer monitoring wells which has been very successful in adding new wells to the Napa County Groundwater Monitoring Program;
- Hold a joint public outreach meeting of the GRAC and WICC Board (July 25, 2013);
- Reviewed and recommended modifications to the Napa County Water Availability Analysis and Groundwater Ordinance; and
- Developed and approved Groundwater Sustainability Objectives.

As of April 2014, the Groundwater Resources Advisory Committee (GRAC) believes that over the past 2+ years it has fulfilled its duties and obligations and would like to present the Napa County Board of Supervisors (BOS) with its final conclusions and recommendations.

GRAC CONCLUSIONS

- The 2011 baseline study by LSCE, which included over 600 wells and data going back over 50 years, concluded that “the groundwater levels in Napa County are stable, except for portions of the MST district”. Most wells elsewhere within the Napa Valley floor with a sufficient record indicate that groundwater levels are more affected by climatic conditions, are within historical levels, and seem to recover from dry periods during subsequent wet or normal periods.

- The LSCE Study also concluded that, on a regional scale, there appear to be no current groundwater quality issues except north of Calistoga (mostly naturally occurring boron and trace metals) and in the Carneros region (mostly salinity).

- In spite of the conclusions reached by LSCE in the first bullet point above, Napa County still does not have adequate science-based answers to critical questions regarding the availability of water in Napa County or the interaction between surface and groundwater resources in Napa County. In addition, future monitoring should try to fill the “data gaps” that exist and will focus on 1) monitoring groundwater-to-surface water connectivity at 5 sites along the Napa River and 2) adding groundwater monitoring wells in 18 Areas of Interest to fill higher priority groundwater monitoring needs and to achieve monitoring objectives (Napa County Groundwater Monitoring Plan 2013 (January 2013) see p. 26-27).

GRAC RECOMMENDATIONS

1. Since the 2011 baseline study found no unforeseen groundwater quantity or quality issues, ***the GRAC recommends that Napa County focus primarily on education and outreach to everyone living and working in Napa County to institutionalize water conservation as a community value and to advocate the use of best sustainable practices to achieve this goal rather than relying on new regulations or ordinances.***

Groups could include the Napa County Resource Conservation District, industry and environmental and other community groups. These efforts could be overseen by the Watershed Information Center & Conservancy (WICC).

2. ***The GRAC recommends that only water usage criteria in Tier 1 and the technical deficiencies in the Tier 2 analysis section of the current Water Availability Analysis (WAA) be revised.***

In an effort to implement the groundwater protections described in the existing groundwater ordinance based on well construction and placement, the County Staff had proposed a considerably more complex analysis be done prior to permit filing in an effort to avoid challenges to these permits. However, noting the success of the existing Water Availability Analysis (WAA) and the relatively small number of challenges of discretionary use permits in Napa County on the basis of groundwater use, the GRAC recommends that all of the other aspects of the WAA remain unchanged for now. Policy changes may be warranted if accurate and adequate scientific data on groundwater and its interface with surface water is established and if appropriate CEQA analysis is conducted.

3. ***The GRAC recommends that the BOS continue to build a database of science-based answers to critical questions regarding the availability of water in Napa County and the interaction between surface water and groundwater resources*.**

The expanded Groundwater Monitoring Network and Program will advance understanding of groundwater conditions in Napa County. However, there are also many non-groundwater related data sets involved in the understanding of long-term groundwater sustainability. The GRAC also recommends that future studies should consider the scientific uncertainty associated with the existing and new data used as part of those studies. Quantitative measures of confidence should be developed as part of future studies, as appropriate, to ensure that the conclusions from the studies and modeling tools applied during such studies are clearly understood by staff, stakeholders, policy makers, and the general public. These efforts could be overseen by the Watershed Information Center & Conservancy (WICC).

4. **The GRAC** ***also recommends that the Groundwater Monitoring Plan currently being implemented by the County be positioned primarily as a tool to monitor the countywide progress toward achieving groundwater conservation and quality, and stable groundwater levels.***

With regard to the Monitoring Plan, the GRAC strongly recommends that the BOS continue to pursue, as at our April 2, 2013 meeting, ways to enhance the confidentiality of private well data in order to encourage broader participation by private well owners in the Groundwater Monitoring Program.

We believe that this voluntary approach should maximize public support to optimize the County's future water supplies while helping to determine if any significant changes in groundwater conditions are occurring and provide a factual basis for any future regulations if they appear warranted. This is an intentional effort to build broad community support through an inclusive, voluntary, non-regulatory approach.

Staff Addendum

The Department of Public Works and the staff to the Groundwater Resources Advisory Committee (GRAC) would

first like to thank the committee members for their continued commitment to this effort over the past 2 1/2 years. This was an incredible group to work with and it was quite a journey with no shortage of ups and downs along the way. As it turns out, it was also a very timely effort given the current drought and its impacts throughout California. Through the efforts of the Groundwater Resources Advisory Committee we are on a path toward insuring the sustainability of our groundwater resources for generations to come.

The following items are noted here because they were an important part of the Groundwater Resources Advisory Committee's work but may not have been fully covered in the above report. Thus they warranted additional information which has been provided in the supporting documents, as noted.

Groundwater Sustainability Objectives (see supporting documents - attachment B).
Groundwater Sustainability Objectives were developed and recommended by the GRAC. In their recommendations, the Committee reviews the goal of developing sustainability objectives, provides a definition, and explains the shared responsibility for Groundwater Sustainability. They go on to review the important role of monitoring as a means to achieving groundwater sustainability and the principles underlying the sustainability objectives. The groundwater sustainability objectives are outlined, along with an implementation table which provides additional recommendations on how, metrics of success, by when, by who, and estimated cost ranges.

Water Availability Analysis (WAA)/Groundwater Ordinance Updates (see supporting documents - attachment C).
The GRAC reached consensus on the need to address technical deficiencies in the WAA but could not reach a consensus on other proposed changes to the WAA process. The final recommendation represents the majority vote of the committee on the two perspectives that were discussed. With increased public opinion/comment on this very subject due to the current drought, this may warrant additional discussion. The Groundwater Ordinance updates recommended by the GRAC will follow the completion of the Water Availability Analysis updates. Staff intends to obtain additional public input on the WAA, and return to the Board at a future meeting for further direction prior to completing a draft of the document.

SUPPORTING DOCUMENTS

A . Groundwater Resources Advisory Committee Workplan/Timeline

B . Napa County Groundwater Sustainability Objectives

C . GRAC Mtg Summary(s) and Memo on WAA-GW Ord Updates

D . Update on Education-Outreach and Well Owner Outreach for Monitoring

E . Napa County Groundwater Monitoring Plan 2013

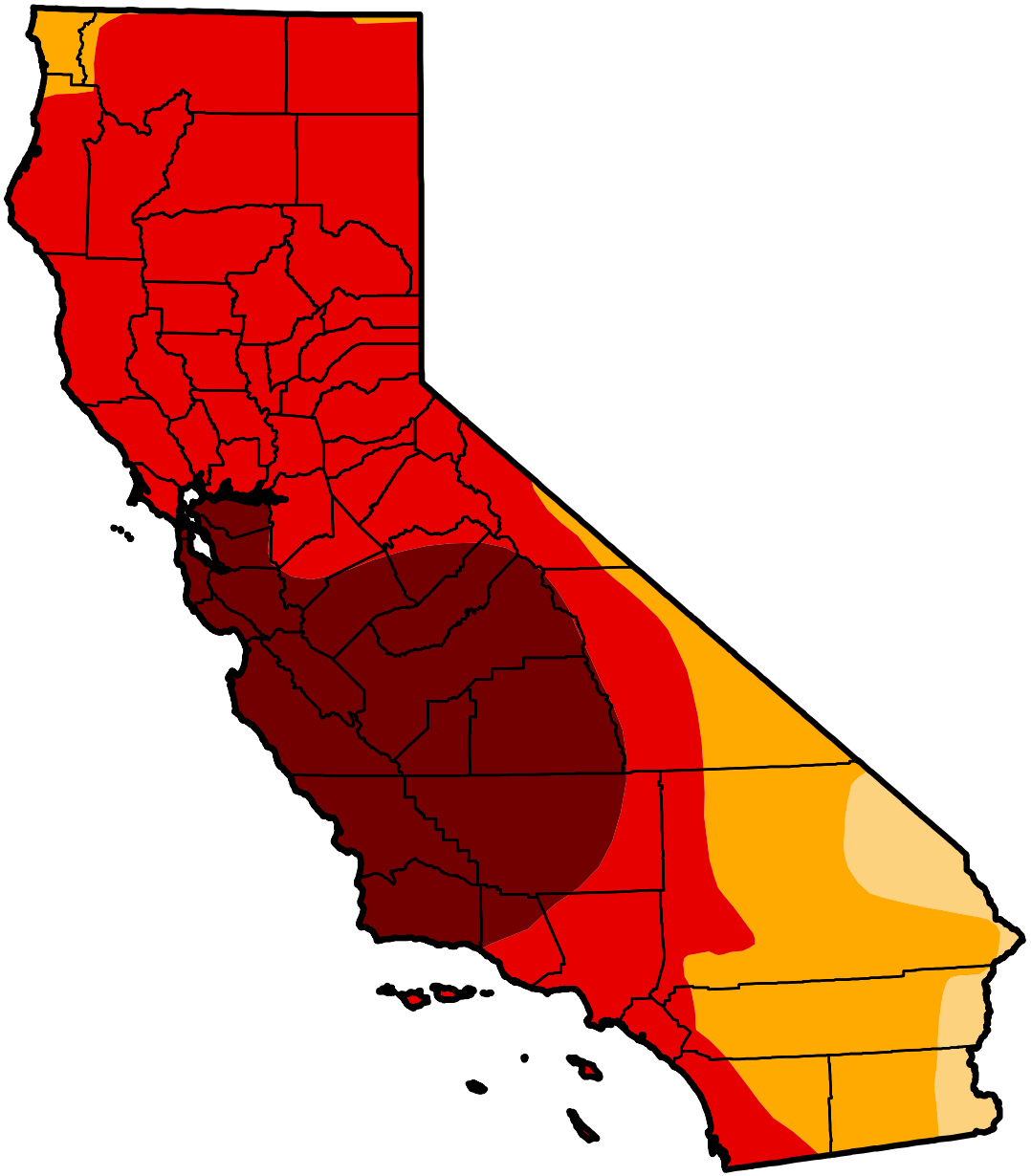
F . Education and Outreach Brochure/Inserts

CEO Recommendation: Approve

Reviewed By: Molly Rattigan

U.S. Drought Monitor

California



May 6, 2014

(Released Thursday, May. 8, 2014)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	95.93	76.68	24.77
Last Week *4/29/2014*	0.00	100.00	100.00	96.01	76.68	24.77
3 Months Ago *2/4/2014*	1.43	98.57	94.18	89.91	67.13	9.81
Start of Calendar Year *12/31/2013*	2.61	97.39	94.25	87.53	27.59	0.00
Start of Water Year *10/1/2013*	2.63	97.37	95.95	84.12	11.36	0.00
One Year Ago *5/7/2013*	0.00	100.00	98.16	46.25	0.00	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Mark Svoboda
National Drought Mitigation Center

http://droughtmonitor.unl.edu/

ANTICIPATED SCHEDULE OF FUTURE IRWM GRANT SOLICITATIONS

APRIL 3, 2014

Activities	Tentative Target Date
2014 Drought Solicitation	
Release Draft Program Guidelines & PSP	April 3, 2014
Release Final Program Guidelines & PSP	June 2014
Applications Due	July 2014
Announce Final Conditional Awards	September 2014
Round 3 Prop. 84 Implementation Grant (Pending Appropriation; no earlier than FY 15-16)	
Release Draft Program Guidelines & PSP	Spring 2015
Release Final Program Guidelines & PSP	Summer 2015
Applications Due	Fall 2015
Announce Draft Recommendations for Public Review & Comment	Winter 2016
Announce Final Awards	Spring 2016

A Tradition of Stewardship
A Commitment to Service

MCE Clean Energy
My community. My choice.

You're invited!
May 20, 2014

More clean energy choices may be coming to unincorporated Napa County

Join us for a Public Workshop!

Please join your neighbors for a presentation, discussion and Q&A about unincorporated Napa County's potential new clean electricity options.

Hosted by Napa County & MCE. All are welcome!

Tuesday, May 20, 2014
5:30pm – 6:30pm

Trefethen Family Vineyards
1160 Oak Knoll Avenue
Napa, CA 94558

Workshop Speakers & Topics:

- Napa County Supervisors Mark Luce & Keith Caldwell
- MCE Executive Officer Dawn Weisz
- Unincorporated Napa County's interest in Community Choice Aggregation (CCA)
- MCE program facts and benefits
- Opportunities for solar and energy efficiency

Unincorporated Napa County is exploring the possibility of joining MCE, a not-for-profit public agency which offers residents and businesses options for cleaner energy alternatives to PG&E. MCE also partners with PG&E, which continues to maintain power lines, read meters, issue monthly bills, and deliver the electricity as always.

Workshop questions? Contact Deborah Elliott: deborah.elliott@countyofnapa.org

Questions about MCE? Visit: www.mceCleanEnergy.org

MCE Clean Energy
My community. My choice.

MCE Membership Expansion

Program Impact Analysis: Napa County

Marin Clean Energy | May 1, 2014

MCE's Current Customer Base

Key Statistics (2014 – projected)

- **Customer base ≈ 125,000**
- **Projected annual energy sales (2014) ≈ 1,300,000 MWh**
- **Projected peak demand ≈ 250 MW**
- **Projected RPS-eligible procurement: 27%+**
- **Projected total renewable procurement: 50%+**
- **Projected carbon free procurement: 60%+**
- **Projected portfolio emission rate: ≈370 lbs CO^2e/MWh**

Prospective Addition of Napa County

Summary

- **September 17, 2013: MCE received letter expressing membership interest from Napa County**
- **December 5, 2013: MCE Governing Board authorized completion of a quantitative membership analysis**
- **March 31, 2014: draft quantitative analysis completed by MCE**
- **Analytical findings are favorable:**
  - **≈3% rate reduction for all MCE customers (existing and prospective)**
  - **72,000 MWh annual increase in statewide renewable energy consumption**
  - **21 million pound annual GHG reduction**

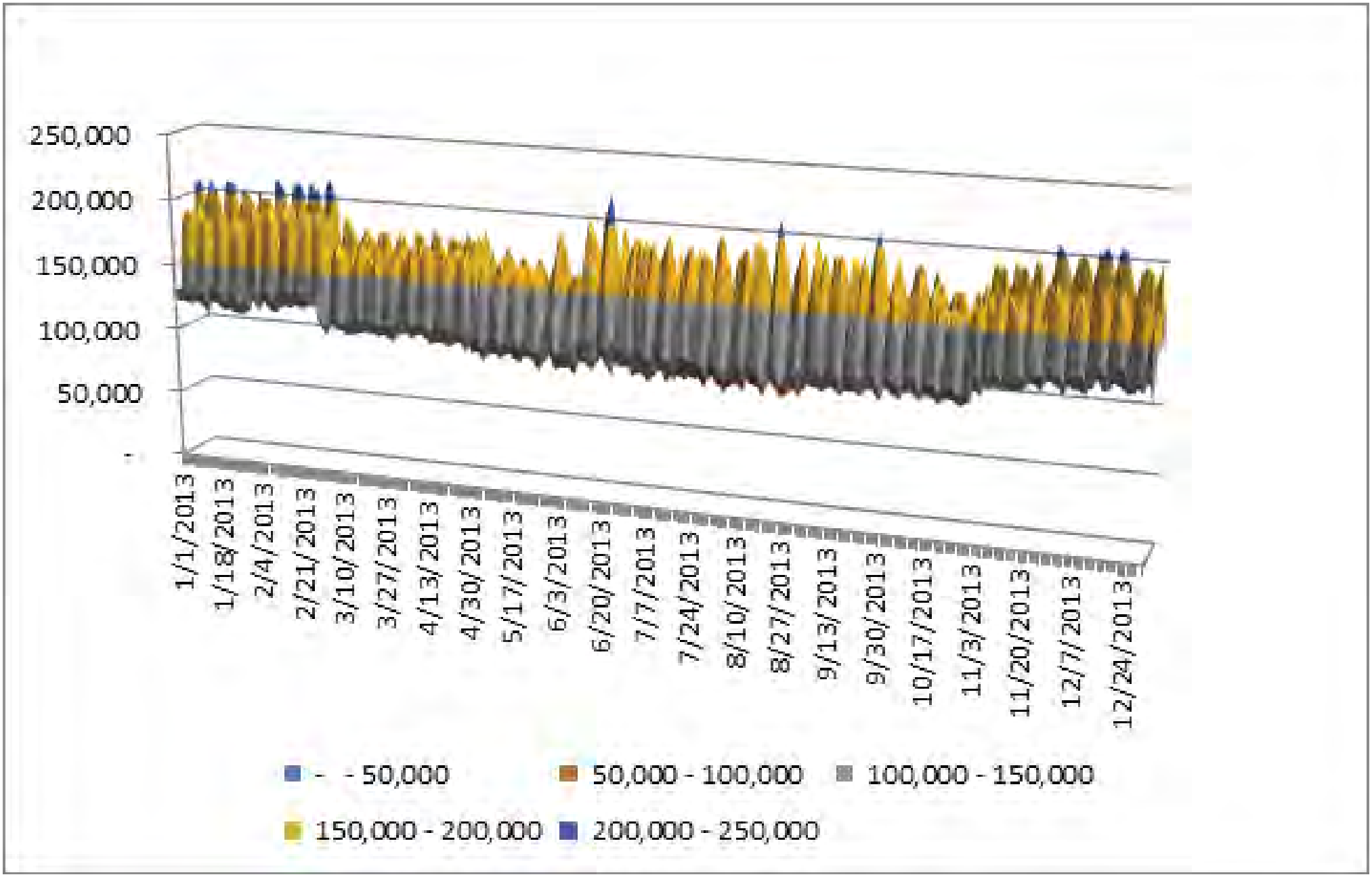
Napa County Customer Base

Classification	Accounts	Annual Energy (MWh)	Monthly Energy (per account, kWh)
Residential	11,929	116,495	814
Small Commercial	1,933	53,972	2,327
Medium Commercial	246	67,621	22,907
Large Commercial	90	66,514	61,587
Industrial	4	13,001	270,855
Agricultural and Pumping	1,606	18,262	948
Street Lighting	162	359	185
Total	15,970	336,223	1,754
Peak Demand (MW)			62

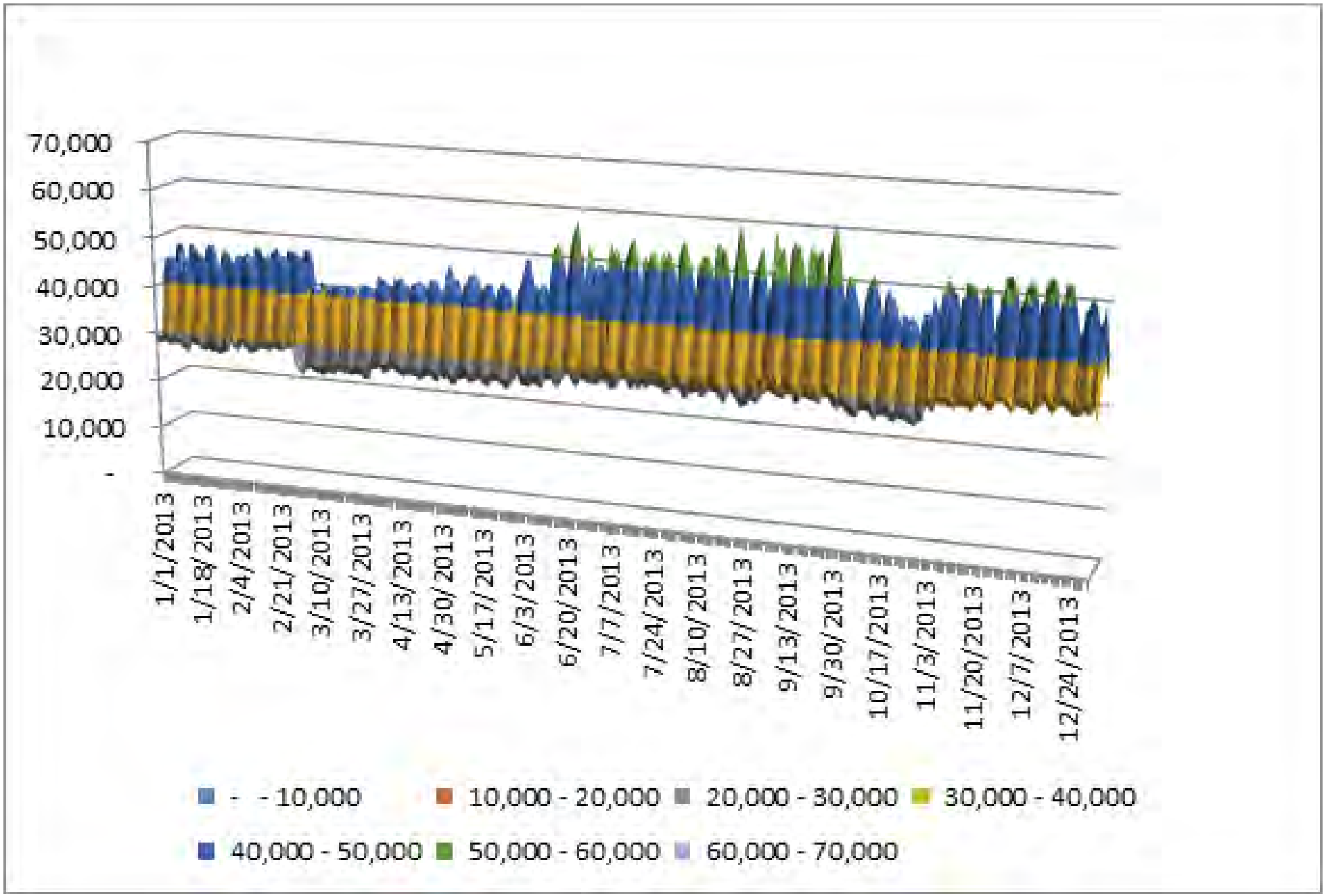
Key Napa County Statistics

- **Nearly 16,000 potential new customers**
- **Potential retails sales increase of ≈ 336,000 MWh/year**
- **Aggregate peak demand increase ≈ 62 MW**
- **Significantly higher proportion of Agricultural & Pumping accounts relative to MCE (nearly 10% of total Napa accounts, relative to <1% for MCE)**
- **Napa County residential customers use nearly 70% more energy per account than MCE's current residential customer base: 814 kWh/month vs. 483 kWh/month**
- **Per account energy use in the commercial sector is also comparatively higher in Napa County**
- **Average monthly usage (across all accounts) is nearly double that of MCE's current customer base: 1,754 kWh/month vs. 896 kWh/month**

MCE Hourly Load Profile



Napa County Hourly Load Profile



Key Assumptions & Projected Outcomes

- **Service assumed to commence in April 2015**
- **Assumed 85% participation rate**
- **Participatory rate translates to a retail sales increase of ≈290,000 MWh, or approximately 22%**
- **Projected revenue surplus**
- **Revenue surplus was assumed to offset a share of MCE's fixed costs… which would reduce MCE's overall rates**
- **Incremental cost analysis accounts for: additional power supply, customer billing, call center support, PG&E service fees**
- **Overall rate reduction approximating 3%**

Cost & Revenue Summary

Volume (MWh)		**275,313**
Revenue	$	23,200,550
Costs		
Power Supply Cost	$	17,516,967
Billing and Other Costs	$	428,310
Total Cost	$	17,945,277
Rate Benefit	$	5,255,274
MCE Rate Impact		3%

Marin Clean Energy Applicant Analysis for the County of Napa

March 31, 2014

SUMMARY

MCE's currently effective policy regarding new membership requires the completion of a quantitative analysis as part of the preliminary evaluative process. The primary focus of the quantitative analysis is to determine the anticipated net rate impacts that would affect MCE's existing customer base following the addition of the prospective new community – in particular, the quantitative analysis must demonstrate that the addition of the prospective new community will result in a projected net rate reduction for MCE's existing customer base; this is a threshold requirement that must be met before proceeding with further membership activities. In addition, the quantitative analysis addresses the projected environmental impacts that would result from offering CCA service to the prospective new community. More specifically, the analysis prospectively determines whether or not the new community will accelerate greenhouse gas (GHG) reductions (beyond those reductions already achieved by MCE's existing membership) while increasing the amount of renewable energy being used within California's energy market.

On September 17, 2013, MCE received a letter from the County of Napa expressing interest in joining MCE. The electric accounts to be considered as part of this membership request include all accounts located within the unincorporated areas of Napa County. On December 5, 2013, the MCE Board of Directors authorized completion of a quantitative membership analysis related to Napa County's membership request. This analysis has been completed and the results are discussed below in this summary report.

In general, the quantitative analysis indicated that rate benefits would likely accrue to existing MCE customers following the addition of prospective CCA accounts located within Napa County. The additional customer base within Napa County would likely result in an approximate 3% rate reduction for MCE customers, including all existing and prospective accounts. The analysis also indicated that including Napa County in MCE's membership would increase the amount of renewable energy being used in California's energy market by approximately 72 thousand MWh per year while reducing GHG emissions by an estimated 21 million pounds of carbon dioxide equivalent per year.[1]

ANALYSIS

MCE conducted an analysis of the potential new electric customers to estimate the revenues and costs associated with extending MCE service to Napa County. The analysis incorporated historical monthly electric usage data provided by PG&E for all current electric customers located within the

[1] GHG emission reduction estimates are based on MCE's actual 2012 emission factor of 373 lbs CO2e/MWh and PG&E's verified 2012 emission factor of 445 lbs CO2e/MWh, as released in February 2014: http://www.pgecurrents.com/2014/02/06/new-numbers-confirm-pge%E2%80%99s-energy-among-the-cleanest-in-nation/. The projected GHG savings of 72 lbs CO2e/MWh (based on the difference between MCE's emission factor PG&E's emission factor) was multiplied by the projected increase in MCE's annual sales volume resulting from the addition of CCA customers located within Napa County, a volume approximating 288,000 MWh/year. Note that these projections are subject to change.

unincorporated areas of Napa County. The data indicate the potential for nearly 16,000 new MCE customers with a potential increase in annual electricity sales approximating 336,000 MWh per year. The aggregate peak demand of these customers is estimated at 62 MW.[2]

Table 1: 2013 Napa County Electricity Data

Classification	Accounts	Annual Energy (MWh)	Monthly Per Account (KWh)
Residential	11,929	116,495	814
Small Commercial	1,933	53,972	2,327
Medium Commercial	246	67,621	22,907
Large Commercial	90	66,514	61,587
Industrial	4	13,001	270,855
Agricultural and Pumping	1,606	18,262	948
Street Lighting	162	359	185
Total	15,970	336,223	1,754
Peak Demand (MW)			62

[2] These figures are for bundled electric customers of PG&E and exclude customers taking service from non-utility energy service providers through the state's direct access program. These figures are unadjusted for expected customer participation rates.

As compared to the current MCE customer base shown in Table 2 below, Napa County includes significantly more Agricultural and Pumping accounts, and proportionately fewer residential accounts. The Napa County Agricultural and Pumping accounts are relatively small in terms of electricity consumption. On the other hand, the residential sector in Napa County uses nearly 70% more electricity per capita than the current MCE residential customer base. The Napa commercial sector also exhibits higher average electricity consumption than MCE's current commercial base. In aggregate, the average monthly usage of Napa County customers (1,754 KWh/month) is nearly twice as high as that of the current MCE customer base (896 kWh per month).

Table2: 2013 MCE Electricity Data

Classification	Accounts	Annual Energy (MWh)	Monthly Per Account (KWh)
Residential	106,762	618,385	483
Small Commercial	11,755	195,505	1,386
Medium Commercial	884	155,315	14,642
Large Commercial	329	188,289	47,694
Industrial	16	121,391	633,830
Agricultural and Pumping	99	3,880	3,266
Street Lighting	850	14,929	1,464
Total	120,695	1,297,694	896
Peak Demand (MW)			221

In regards to seasonal consumption patterns, Napa County electric usage peaks during the summer months, whereas the current MCE load tends to peak during the colder winter months of December and January. These differences can be seen in comparing Figure 1 and Figure 2 below. The seasonal load diversity can help contribute to a flatter overall load profile for MCE, which provides benefits in resource planning and supply management.

Figure 1: Napa County Hourly Load Profile (KW)

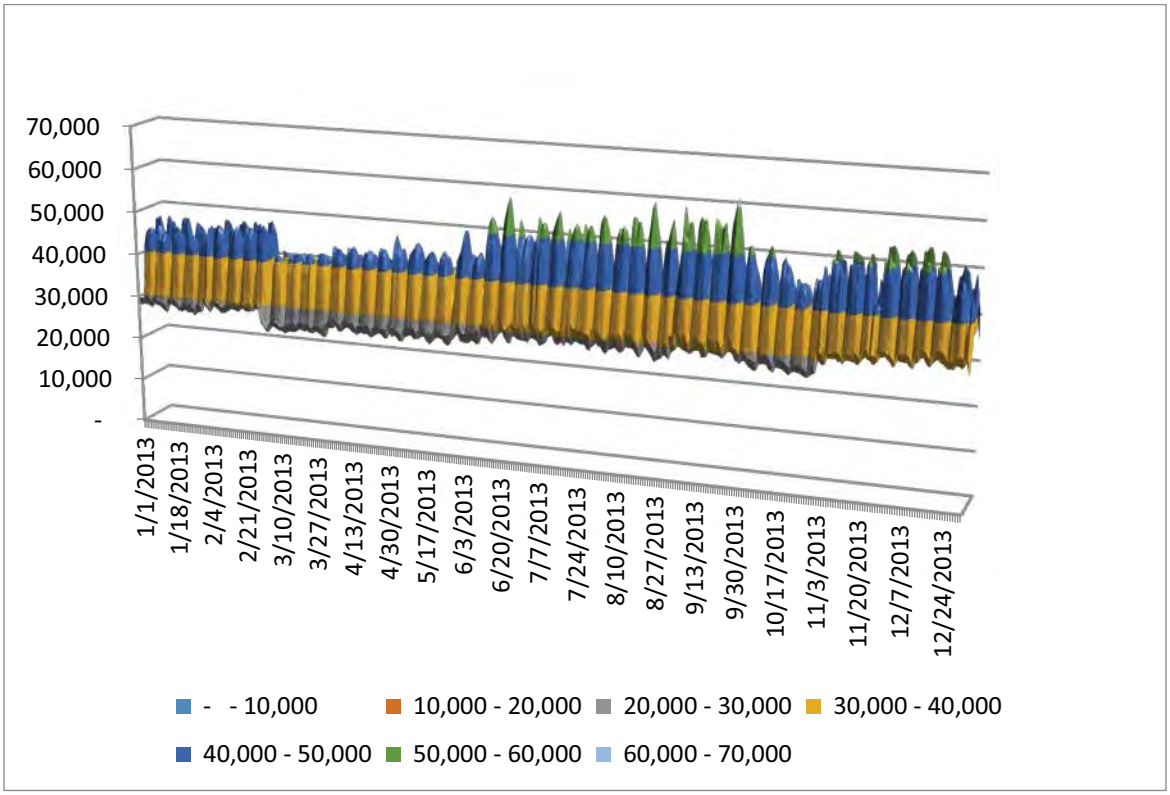
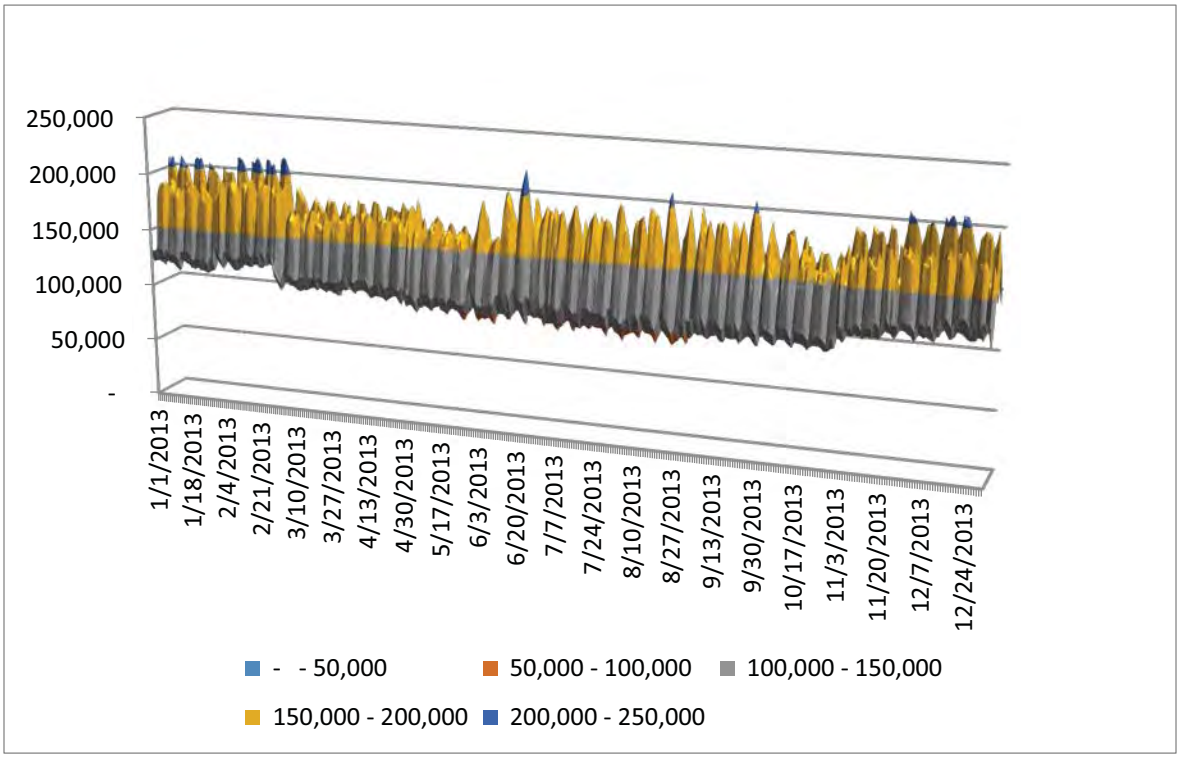


Figure 2: MCE Hourly Load Profile (KW)



RATE IMPACTS

For purposes of the rate impact analysis, it was assumed that service would be initiated to Napa County customers in April, 2015 and that 85% of customers who would be offered CCA service would elect to participate in the MCE program. This would equate to an increase in annual MCE electricity sales of 288,319 MWh or approximately 22%. The rate impact was examined beginning with the 2015/2016 fiscal year, with the new service accounts switched to MCE service during the month of April (April 1st through April 30th, depending on each customer's scheduled meter reading schedule).[3]

Incremental revenues and costs were quantified for the Napa County customer additions, and the revenue surplus (based on the difference between projected revenues and costs directly related to the addition of Napa County customers) was also calculated for the year. The surplus is assumed to offset a share of MCE's fixed costs and can be used to reduce overall MCE rates. The incremental cost analysis accounts for ongoing costs related to additional power supplies, customer billing, customer service support (call center), and PG&E service fees associated with the additional customers. One-time costs associated with the expansion of MCE to Napa County are not included in these figures and are discussed below. Table 3 presents the estimated rate impact for the 2015/2016 fiscal year.

Table 3: FY2015/2016 MCE Rate Impact from Napa County

Volume (MWh)	**275,313**
Revenue	$ 23,200,550
Costs	
Power Supply Cost	$ 17,516,967
Billing and Other Costs	$ 428,310
Total Cost	$ 17,945,277
Rate Benefit	$ 5,255,274
MCE Rate Impact	3%

The rate impact analysis indicates that the addition of Napa County customers to MCE's total customer base would provide benefits to MCE ratepayers; it is estimated that expanding MCE service to Napa County would allow for MCE rates to be 3% lower than without such customers.

Additional costs related to the expansion would be incurred prior to initiation of service to the new customers. These costs would be incurred for regulatory, resource planning and procurement activities that would be necessary to incorporate the new member community and its customers into MCE as well as for communication and outreach to the new customers. The projected implementation costs related to a Napa County expansion are expected to be less than the $450,000 expended in preparation for the expansion to Richmond. This appears to be a reasonable assumption because existing staff (previously added to support the Richmond expansion) and technical resources can be leveraged to support the Napa expansion; the number of prospective customer accounts within Napa County is also less than half

[3] During the first year, the increase in annual sales volume is slightly lower, estimated at 275,313 MWh, due to the gradual transfer of accounts to MCE service during the first month.

of the prospective customer base that was transitioned to MCE service during the Richmond expansion. It should also be noted that the regulatory, resource planning and procurement costs would not be entirely attributable to Napa County if there are other new members brought into MCE at the same time. To the extent that other municipalities are contemporaneously added, such activities could be performed jointly rather than at separate times for each new member.

RENEWABLE ENERGY IMPACTS

Renewable energy requirements were calculated for Napa County to ensure compliance with the statewide Renewables Portfolio Standard (RPS) as well as the more aggressive MCE renewable energy content standards adopted by MCE. The total renewable energy requirement associated with prospective expansion to Napa County would be approximately 144 thousand MWh annually. This renewable energy volume is equivalent to the energy produced by 16 MW of geothermal capacity (or a similar baseload renewable generating technology using a fuel source such as biomass or landfill gas) or approximately 50 MW to 80 MW of solar generating capacity, depending upon location and technology. Including Napa County's electric customers in MCE service will increase the amount of renewable energy being used in California's energy market by approximately 72 thousand MWh annually based on the increased renewable energy procurement targets voluntarily adopted by MCE's governing Board relative to California's then-current RPS mandate (which must be followed by PG&E).

GHG IMPACTS

With regard to projected GHG emission reductions that would result from the expansion of MCE service to Napa County, estimates were derived by comparing the most current, validated emission statistics related to the MCE and PG&E electric supply portfolios. With regard to these statistics, PG&E and MCE both recently reported their respective emission statistics for the 2012 calendar year. Due to typical timelines affecting the availability of such information, PG&E's current statistics (focused on the 2012 calendar year) will generally reference data related to utility operations occurring 12 to 24 months prior to the current calendar year. This waiting period is necessary to facilitate the compilation of final electric energy statistics (e.g., customer energy use and renewable energy deliveries) and to allow sufficient time for data computation, review and third-party audit before releasing such information to the public. As noted by PG&E, its 2012 emission factor was determined to be 445 lbs CO2/MWh. By comparison, MCE's aggregate portfolio emission factor for the 2012 calendar year was determined to be 373 lbs CO2e/MWh, a difference of 19%.

MCE's 2012 emission factor was derived by using publicly available emission statistics determined by the California Air Resources Board (CARB) for certain unspecified electricity purchases included within the MCE supply portfolio as well as assumed zero carbon emission rates for various renewable energy purchases and deliveries from non-polluting power sources, such as hydroelectric generators. With regard to electricity purchases from unspecified sources, or "system power," as reported on a California retail electricity seller's annual Power Content Label, CARB has assigned an emissions rate of 943.58 lbs CO2e/MWh. This emission rate can be referenced in section 95111(b)(1) of CARB's February 2014 update to the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions: http://www.arb.ca.gov/cc/reporting/ghg-rep/regulation/mrr-2013-clean.pdf. PG&E appears to have applied a similar factor when calculating emissions associated with unspecified generating sources.

In 2012, MCE's supply portfolio was heavily weighted towards non-carbon emitting resources. In fact, over 60% of MCE's energy supply was attributable to various renewable energy and hydroelectric purchases, which do not emit GHGs (MCE's 2013 and 2014 procurement percentages reflect similar ratios). When determining MCE's aggregate portfolio emission factor, the aforementioned CARB statistic of 943.58 lbs CO2e/MWh was applied to MCE's system energy purchases, which totaled 225,593 MWh during the 2012 calendar year. All other non-emitting resources were assigned an emission factor of zero. As such, MCE's portfolio emissions for the 2012 calendar year totaled approximately 213 million pounds. This emission total was divided by MCE's aggregate sales volume of 570,144 MWhs, resulting in an MCE portfolio emissions rate of 373 lbs/MWh, for the 2012 calendar year. The following table provides additional detail regarding these emissions computations for MCE's 2012 supply portfolio.

Table 4: MCE 2012 Greenhouse Gas Emissions

2012 Calendar Year	MWh Purchased/Sold	% Total	Emission Rate (lbs CO2e/MWh)	Total Emissions (lbs)
Total Renewable Energy	304,551	53.4%	0	0
RPS – Eligible	166,522	29.2%	0	0
Non-RPS Eligible Renewable	138,029	24.2%	0	0
Zero Carbon	40,000	7.0%	0	0
System Power	225,593	39.6%	944	212,864,133
Totals	570,144	100%	373	212,864,133

To estimate the projected GHG emissions reductions that would likely result from the addition of prospective CCA customers located within Napa County, MCE calculated the difference between its own emission factor (373 lbs CO2e/MWh) and the related metric reported by PG&E (445 lbs CO2/MWh): 72 lbs CO2/MWh. This difference was multiplied by the projected increase in annual electricity sales that would result from the addition of Napa County's CCA customers (228,319 MWh), resulting in a projected GHG emissions savings related to the transition of Napa County's customers to MCE's cleaner electricity supply. The projected emissions savings/reduction related to this service transition (from PG&E to MCE) was determined to be approximately 21 million pounds of carbon dioxide equivalent per year. It is noteworthy that the future emission factors reported by MCE and PG&E will likely differ from the statistics applied in this analysis – this is due to a variety of factors, including planned/unplanned changes in renewable energy procurement (including planned increases in California's RPS procurement requirements), variations in hydroelectric power production (which may change substantially from year to year based on prevailing regional hydrological conditions) and changes/adjustments in the general procurement policies of each service provider as well as many other factors. Also note that MCE has committed to assembling a power supply portfolio that not only exceeds the renewable energy content offered by PG&E but also provides customers with a "cleaner" energy alternative, as measured by a comparison of the portfolio GHG emission rate (or emission factor) published by each organization. As such, MCE plans to continue procuring electricity from non-GHG emitting resources in sufficient quantities to maintain an emission rate that is continually lower than PG&E's.

ASSEMBLY BILL 2193 (GORDON)

EMPOWERING PRIVATE LANDOWNERS, STATE AND LOCAL AGENCIES, AND CONSERVATION ORGANIZATIONS WITH A POWERFUL TOOL TO RESTORE CALIFORNIA'S NATURAL HERITAGE

Over 350 wildlife and plant species in California are considered threatened or endangered under state and federal law. Many others with declining populations will soon be in line for this unfortunate designation. To prevent further losses and recover our imperiled species, we must speed up the pace of habitat restoration efforts across the state. California law and the Department of Fish and Wildlife would benefit from an accelerated pathway for providing the environmental permits necessary for these urgently needed projects. As demand grows for small-scale, voluntary habitat restoration projects that benefit the environment, changes to state law are necessary to facilitate a better coordinated and accessible permitting process that maintains existing environmental protections.

AB 2193 would create a simplified permitting process for landowners, state and local government agencies, and conservation organizations proposing to implement small-scale, voluntary habitat restoration and enhancement projects.

Problem: Californians want to invest in habitat restoration, but current law makes permitting challenging.

Many landowners, land managers, and local governments want to restore their land and the waterways that flow through private property. Projects in large demand include those that improve habitat for endangered species, reduce sediment and pollutants in urban waterways, increase vegetation in riparian corridors, and restore fish habitat in streams and rivers. Gaining the proper state agency approval to implement habitat improvement and clean-water restoration projects can be time-consuming, complicated, and expensive. As a result, many landowners and managers forego opportunities to restore the natural resources under their care.

Solution: Support AB 2193 to simplify the permitting process for small-scale, voluntary projects that improve rural habitats, urban watersheds, and coastal water quality.

- AB 2193 creates a simplified and straightforward environmental permit process for voluntary restoration projects not exceeding 5 acres in size, overseen by the Department of Fish and Wildlife.
- AB 2193 would help align state and federal permitting processes for these important projects.
- AB 2193 includes provisions to maintain strong environmental protections afforded by current law. All approved restoration projects must be consistent with widely recognized restoration practices, must avoid or minimize any incidental impacts, and must result in measurable environmental benefits.

SPONSORED BY SUSTAINABLE CONSERVATION
Contact: Stacey Sullivan, Policy Director, (415) 977-0380 x310, ssullivan@suscon.org

Sustainable Conservation

Date of Hearing: April 8, 2014

ASSEMBLY COMMITTEE ON WATER, PARKS AND WILDLIFE
Anthony Rendon, Chair
AB 2193 (Gordon) – As Amended: April 2, 2014

SUBJECT: Habitat Restoration and Enhancement Act

SUMMARY: Enacts the Habitat Restoration and Enhancement Act which would require the director of the Department of Fish and Wildlife (DFW) to approved habitat restoration and enhancement projects that meet specified criteria. Specifically, this bill:

1) Requires the director of DFW to approve a habitat restoration or enhancement project if the project will maintain existing levels of human health and safety protection, including but not limited to flood protection, and meets all of the following:
   a) Is a voluntary habitat restoration project and not required for mitigation.
   b) Is no larger than 5 acres in size.
   c) In consistent with or identified in:
      i. Federal and state listed species recovery plans or published protection measures, biological opinions, or previously approved DFW agreements and permits;
      ii. DFW and National Marine Fisheries Service Screening Criteria or fish passage guidelines;
      iii. DFW's California Salmonid Stream Habitat Restoration Manual; or
      iv. Scientifically researched studies, guidance documents or practice manuals that describe best available habitat restoration or enhancement methodologies.
   d) Will not result in cumulative negative environmental impacts, as specified.

2) Provides that the director's approval of a project shall be in lieu of any other permit, agreement, or license.

3) Requires the director within 30 days of receiving a written request for approval of a habitat restoration or enhancement project to determine whether the request includes all of the required information. Requires that the written request include specified information, including: a full description of the project and how it will result in a net benefit to any affected habitat and species; an assessment of the project area that includes a description of existing flora and fauna and the potential presence of sensitive species or habitat; a description of the environmental protection measures incorporated into the project to protect water quality and protected species, such that no potentially significant negative effects to the environment are likely to occur; and substantial evidence that the project meets the specified requirements.

4) Requires the director to notify the project proponent and suspend implementation of the project if at any time the director determines that the project is no longer consistent with all of the requirements due to a material change. Within 30 days of receipt of a notification of suspension, the project proponent may file a written objection with the director and request a lifting of the suspension. Requires the director within 30 days of receipt of an objection to suspension to either revoke the approval or lift the suspension.

5) Creates the Habitat Restoration and Enhancement Account within the Fish and Game Preservation Fund, the monies within which would be available to DFW upon appropriation of the Legislature to administer and implement this bill. Authorizes DFW to enter into agreements to accept funds for deposit into the account to supplement existing resources. Authorizes DFW to impose a schedule of fees for projects, based on the cost of a project and sufficient to recover all reasonable administrative and implementation costs of DFW related to the project, but not to exceed the fees adopted by DFW for streambed alteration agreements for projects of comparable cost.

6) Defines a "habitat restoration or enhancement project" for purposes of this bill to mean a project the primary purpose of which is to do one or more of the following:
    a) Stream, river bank, lake or other waterway revegetation to improve habitat;
    b) Stream or river bank stabilization with native vegetation or other predominantly non-rock bioengineering techniques to reduce erosion and sedimentation;
    c) Modification, replacement or removal of fish passage barriers, as specified;
    d) Modifications of existing water diversion infrastructure to enhance stream flow and improve fish habitat and survival, including pumps and fish screens;
    e) Placement or installation of large wood, gravel, and other in-stream materials;
    f) Sediment source reduction on existing roads;
    g) Upland erosion control using bioengineering techniques and native revegetation;
    h) Control and removal of invasive plant species;
    i) Installation of fencing and alternative stock water supply infrastructure;
    j) Restoration of freshwater and tidal hydrologic functions in wetlands and estuaries;
    k) Creation of off-channel habitat to restore historic rearing and flow refugia;
    l) Restoration of floodplains to restore natural hydrologic function;
    m) Restoration and maintenance of existing off-stream ponds, including spillway repair and sediment removal;
    n) Other habitat restoration projects requiring permits from DFW whose primary purpose is to recover listed species and are included in species recovery plans or other DFW identified habitat and species recovery actions.

7) Defines various other terms for purposes of this bill.

8) States legislative findings and declarations regarding the need for small-scale ecosystem restoration projects to benefit listed species and the need for more efficient and expedited processes for willing landowners and local governments to obtain necessary regulatory approval and permits for such projects. States legislative intent to provide for substantial permitting efficiency to encourage increased implementation of voluntary, environmentally beneficial small-scale habitat restoration projects that provide an individual and cumulative net environmental benefit, incorporate measures to protect against any adverse change, and follow applicable preexisting state and federal agency permits, certifications and exemptions.

EXISTING LAW:

1) Establishes DFW as the trustee for the fish and wildlife resources of California and prohibits any act which could directly or indirectly "take" threatened or endangered species listed under the California Endangered Species Act (CESA) unless authorized by DFW.

2) Requires DFW authorization if an action could affect an endangered or rare native plant unless it fits into an exemption for agricultural activities, timber operations or mining.

3) Requires a Lake or Streambed Alteration Agreement with DFW in order to protect and conserve fish and wildlife resources if an activity could change the bed, bank or channel of a stream or lake.

4) States that specified activities to assure the maintenance, restoration, or enhancement of a natural resource, including small habitat restoration projects for fish, plants or wildlife that do not exceed five acres in size, are categorically exempt from further review under the California Environmental Quality Act.

5) Provides DFW with an expedited mechanism to approve specific types of voluntary on-the-ground habitat restoration projects that benefit Coho salmon. Projects eligible for the approval are limited to projects within a region described in an adopted state or federal Coho salmon recovery plan that do one or more of the following: restore stream banks, modify water crossings, or place wood to enhance habitat or increase stream complexity. Eligible projects are also limited to projects that are less than five acres in size or 500 linear feet.

FISCAL EFFECT: Unknown; this bill authorizes DFW to impose fees for projects, but limits the amount of such fees to the amount of fees charged for streambed alteration agreements for projects of similar cost. It is unclear whether this will be sufficient to fully cover the costs of DFW's review of project applications.

COMMENTS: The author has introduced this bill to provide private landowners, conservation organizations and local public agencies with streamlined access to the environmental permits required for small (less than 5 acres) ecosystem and urban watershed restoration projects. By providing an efficient path for regulatory compliance, the author seeks to create new opportunities for much-needed rural, urban, coastal, and inland ecosystem restoration projects. As the legislative findings and declarations in the bill indicate, California is home to many species that are threatened or endangered, and for some of these species, immediate recovery actions are necessary to avoid further population declines or extinctions. While tremendous demand exists for small-scale ecosystem restoration projects, current regulatory mechanisms create barriers to the ability of many willing private landowners and local governments to efficiently access the necessary permits to implement the projects. Since demand for these public benefit projects outpaces the regulatory approval process's capacity, hundreds of small projects designed to benefit California's most vulnerable wildlife species are not being implemented.

Current law generally requires that project proponents secure CEQA, CESA, Water Board permits, and streambed alteration agreement permits for many kinds of small-scale but important ecosystem restoration projects. Backlogs and delays associated with permitting have been identified as substantial barriers to implementing these small voluntary restoration projects in many regions throughout the state. This bill is designed to provide the DFW with a more efficient process for reviewing and approving small, voluntary restoration projects. One of the ways it does this is by requiring that more detailed information necessary for approval of the project be provided upfront in the application. Eligible projects would be limited to small-scale, voluntary projects of five acres or less. Project applicants would be required to demonstrate, among other things, that the project is consistent with existing state or federal recovery plans or other specified policies, would provide a net benefit to affected habitats and species, and would not result in cumulative impacts.

A similar measure was enacted last session, but only applied to a more narrow group of projects designed to assist in recovery of Coho salmon habitat. AB 1961 (Huffman), known as the Coho Help Act, streamlined and expedited the approval process for Coho salmon habitat enhancement projects in order to prevent extinction. The habitat projects were limited to areas with an approved Coho salmon recovery plan and included modifications of water crossings to remove barriers to fish passage (e.g. replacing culverts), stream bank restoration, and wood placement to increase the complexity of stream flow (e.g. placing wood stumps or logs to form pools).

Support Arguments: Supporters, who include groups that work with farmers, ranchers, water districts, local governments and nonprofits on ecosystem restoration strategies, assert that important habitat restoration work to benefit vulnerable wildlife species in California could be significantly ramped up to meet the demand and need for this work if a new, consolidated environmental permitting process were developed for small-scale voluntary ecosystem restoration projects. Supporters assert this bill will simplify the permitting process at DFW for landowners, state and local governments, and conservation organizations proposing to implement small-scale environmentally beneficial projects, while also ensuring compliance with necessary environmental protections. This bill will also assist DFW in meeting goals for species recovery.

REGISTERED SUPPORT / OPPOSITION:

Support
Sustainable Conservation (sponsor)
California Association of Resource Conservation Districts
California Invasive Plant Council
California Watershed Network
Cachuma Resource Conservation District
Defenders of Wildlife
Environmental Defense Center
Environmental Defense Fund
Gold Ridge Resource Conservation District
Marin Resource Conservation District
Mendocino County Resource Conservation District
Monterey County Resource Conservation District
Placer Resource Conservation District
San Mateo County Resource Conservation District
Shasta Valley Resource Conservation District
Sierra Business Council
South Coast Habitat Restoration
Tahoe Resource Conservation District
Tehama County Resource Conservation District
The Land Conservancy of San Luis Obispo County
Upper Salinas-Las Tablas Resource Conservation District
Ventura County Resource Conservation Districts
Yolo County Resource Conservation District

Opposition
None on file.

Analysis Prepared by: Diane Colborn / W., P. & W. / (916) 319-2096

The Strategic Planning Process

What is a Strategic Plan?

A disciplined effort to produce fundamental decisions and actions that shape and guide what an organization is, what it does, and why it does it, with a focus on the future. It helps an organization focus its energy and ensures that members of the organization are working toward the same goals.

What does it contain?

Mission Statement
A brief expression of the organization's purpose. *"Why do we exist?"*
"What, at the most basic level, do we do?"

Guiding Principles
The principles on which an organization is built, and that guide its planning, operations and programs.
"What do we believe in?"

Vision Statement - Internal
A description of the organization's desired future state.

Vision Statement - External
The organization's desired influence of their work on their target community or constituency.
"What is the impact of our work?"

Goals
Desired outcomes focused on discrete parts of the organization's programming or internal operations.
"What do we want to accomplish?"

Strategies
Tasks or activities needed to achieve the goals.
"How will we accomplish our work?"

Implementation
Prioritizes the strategies, identifies timing and responsibilites, and provides measures of success.
"What will we do first?"
"Who is responsible?"
"How will we know if we have succeeded?"

What are the steps?

Organizational analysis
- Strengths
- Weaknesses
- Opportunities
- Threats

→ Review and refine
-Vision
- Mission
- Goals
- Guiding Principles

→ Identify strategies to achieve goals

→ Prioritize strategies, define responsibilities and measures of success.

What are the WICC Strategic Plan steps?

Task 1: Information Gathering and Assessment - Review Background Documents and Conduct Surveys of Key Stakeholders

→ Task 2: Work with County Staff to Evaluate Prior Actions

→ Summarize Findings

→ Task 3: WICC Board Workshop 1

→ Task 4: Prepare Revised Goals, Strategies and Actions

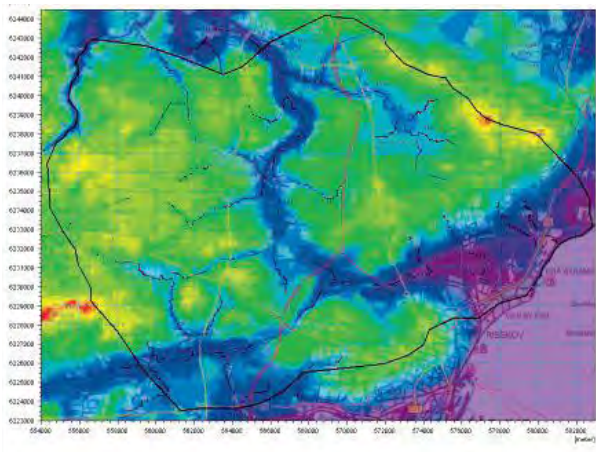
→ Task 5: WICC Board Workshop 2

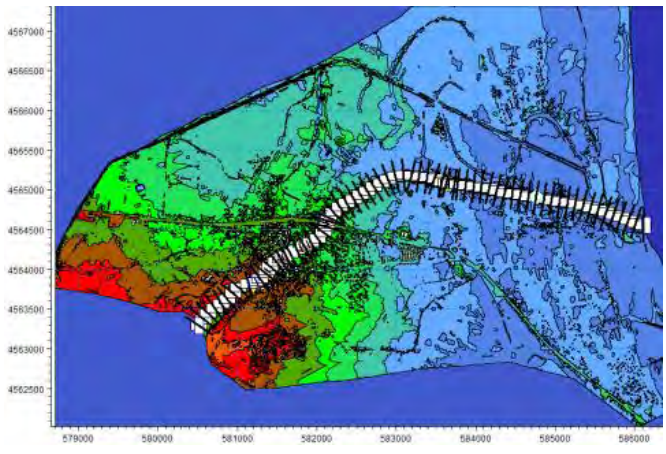
→ Task 6: Prepare Final Strategic Plan

→ Task 7: WICC Board Adoption

Napa County

Integrated Surface and Groundwater model

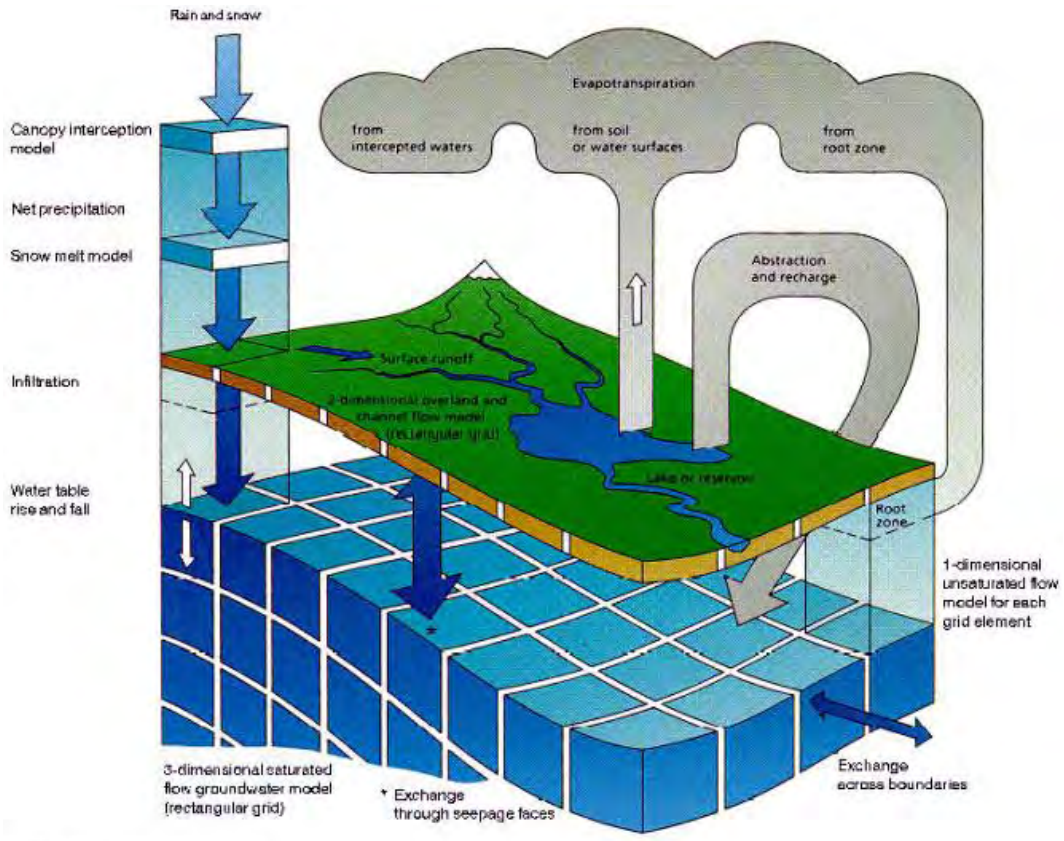




MIKE SHE integrated surface and groundwater modelling

MIKE SHE has been used in a broad range of applications. It is being used operationally in many countries around the world by organizations ranging from universities and research centers to consulting engineers companies (Refsgaard & Storm, 1995). MIKE SHE has been used for the analysis, planning and management of a wide range of water resources and environmental and ecological problems related to surface water and groundwater, such as:.

- River basin management and planning
- Water supply design, management and optimization
- Soil and water management
- Surface water impact from groundwater withdrawal
- Conjunctive use of groundwater and surface water
- Wetland management and restoration
- Ecological evaluations
- Groundwater management
- Environmental impact assessments
- Aquifer vulnerability mapping
- Fully Coupled Surface Water/Groundwater Contaminant Fate/Transport Evaluations/Mitigation
- Flood/Floodplain studies/mitigation
- Impact of land use and climate change
- Impact of agriculture (irrigation, drainage, nutrients and pesticides, etc.)



Selected examples of application

Napa country integrated groundwater-surface water MIKE SHEModel

In 2006, the Napa County Conservation, Development, and Planning Department (Napa CDPD) updated the county General Plan guiding county development for 20 years. This effort included development of a Baseline Data Report that characterized existing conditions in the county and an Environmental Impact Report (EIR) for the General Plan. Flood hazards, declining groundwater resources, pathogen and sediment loading, and conversion of grasslands and forests to vineyard cultivation were among the primary concerns of the county with respect to water resources.

The models were used to evaluate the impacts of four vineyard development scenarios under four hydrologic conditions (existing, 2-yr drought, 100-yr flood, recycled water-use) as part of the county's General Plan Update and associated EIR. Results showed declines in groundwater storage in 2 of 3 primary aquifers, declines in total annual and low flow conditions of up to 6%, increases in peak 100-yr discharges in the Napa River of up to 7%, minimal impacts to coliform levels or water temperatures, increased nutrient concentrations of up to 10% as a result of increased fertilizer application, and increases in soil erosion by soil type. Potential impacts of the General Plan Update for the EIR were summarized to prioritize vineyard development plans in the county, and design effectiveness requirements of Best Management Practices needed to offset the impacts of the proposed vineyard development.

Recent model comparisons

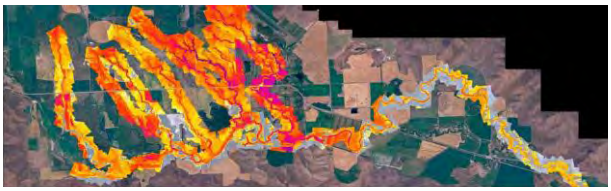
Despite seeing other integrated hydrologic codes being developed, MIKE SHE has been found to be the most comprehensive and flexible integrated model evaluated and applied to the case studies in this document: http://bit.ly/1jexGG2

Colorado, Golden – Rocky Flats Environmental Technology Site (RFETS) – U.S. Department of Energy

Decommissioning of a Former Nuclear Weapons Manufacturing Facility, required modeling coupled groundwater-surface water interactions and water quality in a semi-arid region. Scenarios included remedial designs, surface water pond operations, closure designs, landfill covers, and reclamation.

Learn more: http://bit.ly/1srTKwf

Idaho, Silver Creek (Nature Conservancy)



To evaluate alternative watershed management strategies for the unique Silver Creek ecosystem, DHI developed an ecological, hydrological and water quality (thermal loading) tool by combining ECOLab with the MIKE SHE modelling framework.

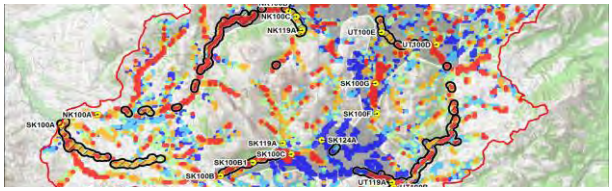
Learn more: http://bit.ly/1IlxGQ3 and http://bit.ly/1jeyZVk

Alaska, Cook Inlet – (Chuitna Watershed, (U.S.Fish and Wildlife)

Assessed response of integrated surface water-groundwater flow and stream temperatures to climate and landuse changes. Results used to assess impacts on Salmonid habitat.

Learn more: http://1.usa.gov/QHhDUh

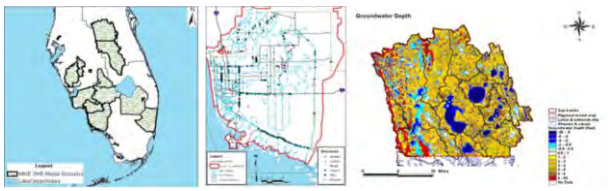
Alaska, Bristol Bay - (Pebble Mine - Nature Conservancy)



Integrated flow and water quality were simulated using MIKE SHE to show impacts of climate change and proposed mining. EPA peer-reviewed this work, and made several references to it in their environmental impact assessment.

Learn more: http://bit.ly/RDjDOk

Florida (SFWMD, SJRWMD, SWFWMD)



MIKE SHE/MIKE 11 has been applied in numerous regional and local water districts throughout Florida, many associated with the Federally-funded Comprehensive Everglades Restoration Program (CERP). Among others, DHI has developed models for the Big Cypress Basin (BCB), Collier County regional model (860 miles of canals), Tiger Bay-Daytona Beach (Water Supply/wetland impacts), C43 Canal, Kissimmee Basin Modeling and Operation Study, Lee County Density Reduction/Ground Water Resources (DRGR), Lake Toho, Broward County Water Planning. Most models include extensive, complex surface drainage networks, numerous control structures (culverts, gates, weirs, pumps, diversions, bridges), detailed land-use, fully distributed climate data, and multiple aquifers with pumping/irrigation.

Learn more: http://bit.ly/1srVuFQ

Learn more

about:
MIKE 11: http://bit.ly/1jZJRVT
MIKE SHE: http://bit.ly/1nHFB0c

Contact:
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About New World Truffieres

Dr. Charles Lefevre

Dr. Charles Lefevre
New World Truffieres
Truffle Growers' Forum Speaker

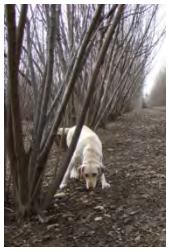
Dr. Charles Lefevre is the President and founder of New World Truffieres, a rapidly growing company specializing in truffle cultivation and the controlled inoculation of oak and hazelnut seedlings with a range of culinary truffle species. New World Truffieres owes part of its success to numerous magazine and newspaper articles in publications including the New York Times, The New Yorker, "W" Magazine, Forbes, Audubon, and many others. With his wife Leslie Scott, he founded the Oregon Truffle Festival in 2006, his interests being to promote educational seminars and trainings on a range of issues, from cultivation of European species to proper harvesting techniques of Oregon's native culinary truffles. There are now at least 9 producing orchards in North America planted with trees provided by New World Truffieres.

Born and raised in Oregon, Charles' abiding interest in forest ecosystems generally, and in wild edible mushrooms in particular, led to both undergraduate and graduate degrees in biology and mycology. He received his Ph.D. in Forest Mycology at Oregon State University in 2002, conducting research on the host associations of the American Matsutake mushroom. He was President of the North American Truffling Society for almost 10 years, and has been an invited speaker at a number of national and international conferences on the North American truffles, most recently as a plenary speaker at the 3rd International Congress on Truffles in Spoleto Italy. He has published technical articles on the Oregon truffles and cultivation of the celebrated European species.

His recent research includes the range of possible ecosystem functions planted and native truffles might provide, including restoration of riparian vegetation to provide wildlife migration corridors, stabilization of stream banks, and as carbon sinks to mitigate climate impacts at the same time they provide financial incentives to land owners in either either planted orchards or small native woodlot set asides. To these ends, Dr. Lefevre has been instrumental in the establishment of two demonstration projects, most significantly that at Berggren Farm in the McKenzie River Watershed in Springfield Oregon.

Truffle Cultivation

Truffles are among the world's preeminent culinary delicacies. Revered for millennia, only their price has kept pace with their fame. Retail prices in the U.S. for *Tuber melanosporum*, the French black truffle or Perigord truffle, and *Tuber magnatum*, the Italian white truffle, have reached $1000 and $3000 per pound. Most truffles are harvested in the wild and since the wild supply is diminishing, prices continue to climb.



Truffles are a form of mushroom that develops underground in symbiotic association with the roots of trees. The breakthrough that made their cultivation possible was development of technology to inoculate host trees with the fungus under controlled conditions. The use of inoculated trees to cultivate *Tuber melanosporum* and other truffles has proven successful over the past 20 years in Europe and many farms, including two in the United States are now producing French black truffles in other parts of the world.

To cultivate truffles, inoculated truffle trees are planted in orchards much like those for fruits and nuts, except that the crop appears below ground and is usually harvested with the help of trained dogs or pigs that can smell the truffles through a layer of earth. Truffles begin to appear several years after the inoculated seedlings are planted and production can continue for decades. The onset and duration of production depends to some extent on the species of host tree. Yields vary dramatically: some farms produce as much as 150 pounds per acre each year while others produce little. Typical yields in Europe range between 25 and 35 pounds per acre each year, but as methods improve many more farms are achieving yields in excess of 100 pounds per acre.

New World Truffieres produces truffle tree seedlings (oaks, hazelnuts and other species) inoculated with *Tuber melanosporum* and other truffle species in North America. These seedlings are checked individually to confirm the presence of the fungus and we provide a quality guarantee that the trees are viable, abundantly colonized by the truffle

ectomycorrhizae and completely free of competing truffle species. We are also engaged in an active research program testing new hosts, more truffle species and various cultivation practices for farming truffles in our soils and climates.

Principles of Truffle Farming

Truffles are the “fruit” of fungi that live in mutually beneficial (ectomycorrhizal) symbioses with the roots of host trees. The truffle fungus explores the soil for water and mineral nutrients, which it passes along to the tree. In exchange, the tree provides sugars produced through photosynthesis to the fungus. The tree and the fungus depend on one another, but there are many tree species that can serve as hosts for the truffles, and many fungi that can fulfill the same role for the tree. In nature, these fungi compete for space on the host tree’s root system. This competition limits truffle production, and if conditions are poor, other fungi can displace the truffle fungus from the root system.

Because it is not possible to weed-out competing fungus species, the strategy behind truffle cultivation is to provide the truffle fungus with the conditions it needs to prevail in the competition against other fungi. This competitive advantage is given to the truffles in several ways: through careful site selection, planting inoculated seedlings, and creating soil conditions better suited to truffles than other fungi. With a good site and good quality seedlings, the establishment and management of a truffiere is straightforward and potentially profitable even on a small scale.

Seedlings inoculated while they are still in the nursery give the truffles the advantage of being there first. It is more difficult for other fungi to become established on roots that are already colonized. This factor, by itself, allows European farmers to cultivate truffles within their native habitat, despite the presence of many other fungus species well adapted to the same soil conditions.

In North America, it is often necessary to add lime to raise the soil pH. This simple process creates dramatic changes in soil chemistry that the European truffles need while simultaneously putting North American fungi adapted to low pH conditions at a competitive disadvantage. This is an advantage that European truffle farmers do not have.

Finally, most ectomycorrhizal fungi associate with a limited range of trees and many North American fungi cannot associate with the European trees that we inoculate. In some cases, particularly in the Western U.S., it is possible to plant hosts that lack closely related species in the surrounding flora. This factor reduces the number of native fungus species that are even capable of competing for space on the host tree’s roots.

Altogether, with unusual soil chemistry, non-native hosts and already colonized roots, the truffles may escape from effective competition. In the plant and animal worlds, many introduced species flourish in the absence of native competitors and predators. The same may be true for truffles outside their natural habitat.

Site Selection

Different truffles require different climates and soils. The French black truffle (*Tuber melanosporum*), the truffle species most widely and successfully cultivated, needs a climate without extreme summer heat or extreme winter cold. The truffles begin to form in the soil during the summer when they are vulnerable to damage from high soil temperatures and dry conditions. The truffles mature between December and the end of February when they can be damaged if the soil freezes around them.

These climatic requirements limit the areas where truffles from southern Europe can be grown in North America to southern parts of the Midwest, northern parts of the Southeast, parts of the Mid Atlantic States and a long strip along the West Coast in California, Oregon and Washington. Other areas may be suitable, including parts of Texas, Oklahoma, Idaho, and Southwest British Columbia. If your area is not mentioned, but you feel that it has a relatively mild climate, please contact us. We can look up climate data from your region. In areas with marginally acceptable climates measures can be taken to mitigate microclimatic conditions, including mulching, increasing or decreasing plantation density, choice of site aspect and irrigation.

Truffles require well drained soils. Apart from excellent drainage, French black truffles tolerate a broad range of soils from sandy to clay loams, including rocky soils. Successful farms exist on marginal as well as good soils. Soils should be tested and corrected for serious nutrient deficiencies and imbalances prior to planting. We will work with you to determine what soil amendments are needed, if any.

The natural habitat for French black truffles is on sunny slopes and plateaus, often with a south or west aspect, but many successful truffle orchards are on flat ground and/or other aspects. It is usually necessary to drive on the site to apply lime, till or mow so it should not be too steep.

Finally, the site must not have had ectomycorrhizal trees on it for at least a few years before planting the truffle trees. Ectomycorrhizal trees include many conifers, oaks and other nut trees, and some shrubs, particularly manzanita. Most fruit trees, maples and other ornamentals are not ectomycorrhizal and do not present a problem.

Please feel free to ask us whether particular tree or shrub species on your land will interfere with truffle farming. It is also essential to provide a buffer strip wide enough that the roots will never make contact with nearby ectomycorrhizal trees. Ectomycorrhizal trees that are cleared from the site or are adjacent to the site may support fungi that are capable of competing with the truffles.

Truffle Plantation Establishment & Management

After choosing a site for your truffle plantation, you should have the soil tested to measure its natural pH, buffering capacity, organic matter content and the availability of plant nutrients. The suitable soil pH range is between 7.5 and 8.3, but 7.9 is considered ideal. If your soil pH is below this level, you will need to add lime to raise the pH. Raising the pH can take several years with annual lime applications, but the trees can be planted before the pH reaches the ideal level. However, if the soil pH is low then other fungi living naturally in that soil are probably better adapted to low pH conditions and the faster you get your pH into the ideal range the less likely other fungi are to become established on the roots of your truffle trees. The best approach would be to raise the pH all the way to 7.9 before the trees are planted to give potential competitors as little opportunity as possible to exploit non-ideal conditions, but few farmers are willing to wait that long before planting.

The amount of lime required to raise the pH varies with the starting pH, the soil texture and buffering capacity and the type of lime that you use. The ideal pH is way above levels ideal for maximizing soil fertility and approaches the level where most plants begin to suffer from various nutrient deficiencies. Consequently, agricultural specialists will have a difficult time predicting the amount of lime required to raise the pH since they typically have no experience with raising pH to these levels. The task for the truffle farmer is to add lime incrementally with continued pH testing until the ideal pH is reached. Unfortunately, lime can take two or more years to have its full effect on soil pH and it is often difficult to incorporate additional lime once the trees are planted. The best approach is therefore to apply the majority of the lime in a single application prior to planting the trees, followed by annual pH testing and incremental surface applications until the pH reaches 7.9. Once the ideal pH is reached it will need to be maintained with supplemental lime applications as necessary since rain water tends to leach calcium from the soil and reduce pH over time.

It is also important to correct serious nutrient deficiencies and imbalances prior to planting. Truffles often do better in relatively low productivity soils, but they use all of the same nutrients required by their host trees and will suffer if those nutrients are seriously deficient or made unavailable by imbalances. However, it is important not to overdo it with fertilizers. Generous fertilization will benefit the host tree, but, at some point, the truffles are unable to take advantage of excess nutrition and other fungi that are able to respond to higher soil fertility may gain the competitive advantage.

Arrangement and spacing of the trees is a subject of some debate and different approaches are used. Generally speaking, Tuber melanosporum grows beneath relatively isolated trees or trees at the edge of forests in its natural habitat. Thus, many plantations in Europe are fairly sparse with as few as 100 or fewer large trees per acre. In other cases, the trees are packed close with as many as 1000 trees per acre to encourage the movement of the fungus from one tree to the next through vegetative growth of the fungal mycelium. The spacing of the trees also depends to a large extent on the size of the tree species used, soil fertility, and the willingness of the farmer to thin the trees when they begin to crowd, possibly removing some that may be producing truffles.

It is not necessarily true that more trees will produce more truffles. Trees stressed by overcrowding may have fewer resources to give to the truffles and closure of the canopy is generally considered harmful to survival of French black truffles. Further, while root contact between trees will facilitate spread of truffle mycelium, it also facilitates vegetative spread of competing fungus species. Plantations established with high densities are fine when the trees are young and small, and by having more trees the likelihood of early production increases, but they must be thinned later to prevent crowding.

One plantation arrangement promoted in New Zealand is to mix large, and small trees to take advantage of early production beneath the small trees and longer production beneath the large trees. In this approach, the trees are planted at high densities with, for example, two hazelnut trees per oak tree. The hazelnuts should begin production several years earlier than the oaks, but their production will decline after 20-30 years. The oaks take longer to begin, but they can maintain production for up to 50 years. The plantation density is calculated so that the oaks will be at a desirable spacing once they begin production and the hazelnuts are removed.

The site should be plowed prior to planting to remove existing vegetation and set the stage for planting and maintenance of the plantation. Any lime and/or fertilizer applications are easiest at this time before the trees are planted. This is also the easiest time to install buried irrigation lines. New World Truffieres ships it trees in the winter while they are dormant and they should be planted well before bud burst in the spring. Planting holes can be dug by hand or with a mechanical augur to a depth of approximately 10 inches and a width of at least 4 inches. When filling the hole to bury the roots of the truffle tree, the soil should be broken up to eliminate clods so that no voids are left around the tree's roots. The roots should be buried to just above the root crown. Healing the trees in by drenching the soil in the planting hole with water will collapse any remaining void spaces making better contact between roots and soil and it will improve growth and survival through the first year. Where rabbits and deer are common, the seedlings should be protected from browsing until they grow large enough to endure it. Once the trees are planted it is very important to control weeds and grass growing near them. Grass will kill your trees by depriving them of water and nutrients. At this stage mowing is not sufficient within a few feet of the trees and light tilling or hoeing is more effective to prevent weed establishment. Complete weed and grass control in the vicinity of the trees is essential until they are well established. Finally, irrigation through the first year or two is helpful to ensure survival.

Plantation Management

Once your plantation is established, and the trees have reached 3-5 years old brules or burnt areas where the grass is killed by the truffles should begin to appear. At this point, various plantation management strategies can be employed. The basic management goal is to maintain soil moisture and temperature conditions beneficial to truffle production. The approaches necessary to maintain these conditions can vary from place to place and different farmers may want to use different methods depending on availability of equipment, time and money. The basic management practices include irrigation, weed control, soil aeration, pruning, thinning, mulching, and in some cases fertilization. A fundamental requirement in all cases is to maintain the soil pH necessary for truffle production.

At the extremes of low and high intensity management are the Tanguy and Pallier methods. At the low intensity end of the scale, the Tanguy method calls for mowing to control weeds, but does not involve soil aeration pruning, irrigation, or fertilization. This method is simple enough for those without tractors, availability of irrigation water or the time and money to invest in more intensive management approaches. It is also safer in the sense that it errs on the side of less intervention with its potential to damage the plantation. However, it generally takes a couple of more years for truffle production to begin.

The more intensive Pallier method calls for light tilling or harrowing in the spring and early summer to control weeds and aerate the soil. The trees are pruned into a cone with the point facing down to maximize penetration of sunlight through the canopy and warm the soil. And finally, irrigation is supplied as necessary to emulate the summer and fall weather that produces the largest truffle yields. It is possible through this method to till too deeply and damage roots, and to irrigate too much, giving the competitive advantage to other fungi, so these methods should be used carefully. However, the Pallier approach is thought to produce truffles somewhat earlier than less intensive approaches and to allow the farmer more control over microclimatic conditions. In some cases, irrigation may be necessary simply to keep the trees and the truffles alive if natural precipitation is insufficient.

Frequently asked questions

Q: If I use hazelnut trees as hosts is it possible to profitably harvest the nuts along with the truffles?

A: The hazelnut trees used to cultivate truffles will produce nuts, but for a variety of reasons it would be difficult to harvest them profitably. First, truffle trees are grown from seed so they are not of any named hazelnut cultivar and they will produce heterogeneous qualities and quantities of nuts. Second, the equipment used to harvest hazelnuts requires hard packed soil beneath the trees whereas truffles require loose, fluffy soil. Third, the truffles begin to develop in the summer and are present during the time when hazelnut harvesting equipment would need to be driving on the site. Truffles near the soil surface could easily be squashed by vehicles driving on the site. Work is underway to develop truffle trees that will produce high quality nuts and hazelnut

farming methods do exist that would be compatible with joint truffle production, but these efforts will take some time.

Q: Can I grow grapes, lavender or other crops between the rows of trees before they begin producing truffles?

A: Yes, truffle trees are often planted in old vineyards and lavender fields and many other crops would also be compatible. However, the truffles live in areas with dry summers and are not accustomed to constant moisture availability throughout the summer. Some irrigation can be beneficial to truffles, but too much may shift the competitive balance toward their competitors with a consequent decline in truffle production. Also, truffles typically grow in somewhat low productivity soils and too much fertilization may similarly put them at a competitive disadvantage against competing fungi. So, any other crops planted between the rows of truffle trees should require no more moisture or fertilization than the truffles and they should be able to tolerate the high pH conditions required by the truffles.

Contact Us:

Please feel free to contact New World Truffieres or Dr. Lefevre for information on truffle cultivation in your area or to purchase inoculated trees. We also welcome contact from existing truffle growers around the world.

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