

MEMORANDUM

DATE: March 10, 2016
MEETING OF: March 16, 2016
TO: Board of Directors
FROM: Acting General Manager
RE: **INFORMATIONAL ITEM 12C:** Consider Approval of a Proposal to Establish Recharge Net Metering (ReNeM) as a Pilot Program for Five Years

INTRODUCTION

The Pajaro Valley, along with much California, is continuing to suffer from a multiyear drought. Over the past couple of years the Governor has declared a Drought Emergency (January 17, 2014) and issued an executive order authorizing the State Water Resources Control Board to “impose restrictions to achieve a statewide 25% reduction in potable urban water usage” (April 1, 2014). On September 16, 2014, the Sustainable Groundwater Management Act (SGMA) was signed into law, requiring that groundwater basins achieve sustainability within 20 years. The Pajaro Valley Groundwater Basin (Bulletin 118 Basin 3-2) is in a state of critical overdraft.

In the Pajaro Valley, approximately 56,000 acre-feet of water are used each year to meet the needs of agriculture, households and commercial businesses. Nearly all of that water (~98 %) comes from the groundwater basin. During dry years, significantly more groundwater is pumped than is recharged from rainfall, streamflow, and other sources, and, as a result the groundwater basin is under greater stress than during average and wet years. The stresses affecting the basin cause groundwater elevations to decline and allow seawater intrusion. The Basin Management Plan (BMP) provides a suite of projects and programs aimed at solving these problems. Groundwater recharge is a significant component of the BMP.

On January 19, 2016, Andrew Fisher (UCSC, Professor of Hydrogeology) made a presentation to the PVWMA Board of Directors with a proposal to establish a 5-year pilot program of Recharge Net Metering (ReNeM), which among other things would provide an incentive for landowners to develop managed aquifer recharge projects. Fisher and Chris Coburn, Executive Director of the Resource Conservation District of Santa Cruz County (RCD-SCC) subsequently submitted a written proposal that describes the ReNeM program in greater detail (attached).

During this item, the Board will be asked to consider approval of establishment of the ReNeM pilot program. If approved, the program will begin to operate on October 1, 2016, at the beginning of the next water year.

The ReNeM proposal includes these six key elements:

1. The pilot ReNeM program would operate initially for five years, starting 10/1/16. There would be an option to continue the program, based on results from the initial operating period, but only if there were a positive recommendation based on experience gained.
2. The overall goal is to achieve ~1000 ac-ft/yr of additional infiltration into the ground, where this additional water can recharge underlying aquifers. The infiltration/recharge benefit is to be achieved at ~8-10 field projects, each contributing ≥ 100 ac-ft/yr. Ideally there will be 1-2 new

sites added each year, achieving the total program goal by the end of the 5th year. Actual project implementation is dependent upon securing sufficient outside funds.

3. UCSC and RCD-SCC personnel are to serve as a team for "third-party certification" (TPC) for the ReNeM program, helping to identify and screen potential project sites, raise funds for installation, participate in system designs, obtain permits, develop monitoring plans, collect data and samples, and prepare annual reports on ReNeM operations.
4. TPC personnel will report to the PVWMA annually, including a calculation of net infiltration benefit for each project
5. The PVWMA will apply a formula (described below) to the ReNeM benefit for each project, and calculate a rebate for the landowner/tenant responsible for the project, to be issued the subsequent year.
6. This program is expected to result in little net cost to the agency, mainly modest staff time. It should help to increase the amount of available water in the Pajaro Valley aquifer system (contributing to revenue), and accelerate the pace of bringing the basin into hydrologic balance. Funding to support capital costs and costs for the TPC during the pilot ReNeM program is to be raised from external sources.

DISCUSSION

The pilot ReNeM program is intended to *augment and support* the Basin Management Plan (BMP) by helping to collect and recharge stormwater runoff in strategic locations within the Pajaro Valley Groundwater Basin, bringing additional diversification to existing groundwater recharge efforts. The pilot ReNeM program is consistent with stated BMP goals focused on eliminating groundwater overdraft and halting seawater intrusion. In a time when long-term drought is a real threat, and precipitation patterns appear to be changing to shorter duration, more intense rain events, this proposal has the potential to make the system more robust and adaptable by routing a small fraction of stormwater runoff into aquifers.

By running just 8-10 projects, and having the TPC handle development and operation of these projects independent from, but in coordination with the Agency, there should be little impact on day to day Agency operations. However, those 8-10 projects could collectively contribute approximately 1,000 AFY of recharge. In support of this effort, Agency staff will likely participate at public meetings, perhaps through the Community Water Dialog or similar venues, and staff may also assist with grant writing to raise capital funds.

Projects will use a mixture of technologies (infiltration basins, dry wells, reactive barriers to improve water quality, etc.), with each system being designed individually based on local needs and limitations. Projects will be selected and designed so as to minimize flooding, clogging, or other problems. All projects will be fully permitted, with the RCD-SCC providing leadership in this area.

The project rebate is intended to offset costs for loss of land use and for annual maintenance to keep successful projects running. Following discussions with Fisher, we recommend an initial formula for calculating project rebates as stated below:

$$\text{Rebate} = W_{50} \times (\text{Inf}_{\text{tot}} - \text{Inf}_{\text{inc}})$$

where,

Rebate = Rebate issued to landowner/tenant (\$)

W_{50} = 50% of unit water cost at project location (augmentation fee) (\$/ac-ft)

Inf_{tot} = total infiltration documented at the project site (ac-ft)

Inf_{inc} = incidental infiltration that would have occurred without the project (ac-ft)

This formula ties the rebate directly to project success, providing an incentive to keep the project functional and operating efficiently. We chose 50% of unit water cost for rebate calculation because not all water that infiltrates becomes recharge, and not all recharge is recoverable. For a project generating 100 ac-ft of infiltration benefit, the Rebate would be ~\$9,500 to \$11,750 depending on whether the site is located inside or outside of the delivered water service area.. Options for changing this formula could be considered during the pilot period, if desired, by returning to the Board for approval. A final pilot ReNeM program report will consider alternatives for calculating benefits and rebates, but the formula above should work initially.

FISCAL IMPACT

Over the long-term, the pilot ReNeM program should be revenue neutral or somewhat positive for the Agency because it will put more water into aquifers to serve Agency customers, offsetting rebate costs. Staff time should be modest, mainly to assess annual reports, and to assist UCSC and RCD-SCC staff with securing external funding to support capital and certification costs. Some funding programs require application by a water supplier, like the Agency, but others can be run through the RCD-SCC or UCSC. The sustainability of this funding model will be assessed as part of the pilot program, which will help to quantify actual project costs. Sufficient funds will need to be placed into a rebate line item in the budget to cover managed aquifer recharge incentives during the fiscal year following the period of recharge. The volume of recharge that the Rebate will be based on will be measured and certified by the TCP. Staff propose the rebate program be capped during the 5-year pilot period based on the assumption of a maximum volume of managed recharge of 1,000 acre-feet in given year, which would result in approximately \$100,000 dollars of rebates (\$95,500 if all the recharged water occurred outside the delivered water zone, and \$117,500 if it occurred inside the delivered water zone based on 2015-16 fiscal year rates). The Board retains the right to discontinue the program at any time.

STAFF RECOMMENDATION

That the Board approve establishment of a pilot Recharge Net Metering program as described in the Recharge Net Metering program proposal with the use of the proposed Rebate $\{\text{Rebate} = W_{50} \times (\text{Inf}_{\text{tot}} - \text{Inf}_{\text{inc}})\}$.

ATTACHMENTS

- Recharge Net Metering Program Proposal
- Link to Recharge Net Metering presentation from January 19, 2016 Board of Directors meeting: http://pvwater.org/board-and-committees/board_of_directors_assets/2016_bod_agendas_packets/01_20_16Item10B1_A_Fisher_MAR_Presentation.pdf

A Proposal for a Pilot Program in Recharge Net Metering (ReNeM)

Written for the Board of Directors and Staff of the Pajaro Valley Water Management Agency

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I. Introduction and Motivation

This is a proposal to introduce a pilot program of Recharge Net Metering (ReNeM) in the service area of the Pajaro Valley Water Management Agency (PVWMA, the "Agency"). The goal of this program is to test and demonstrate the efficacy of a strategy to improve the quantity and quality of water resources in the PVWMA service area, assisting the Agency in meeting demand and helping to maintain sustainable and secure water supplies for the Pajaro Valley Groundwater Basin (PVGB). Various projects in the existing Basin Management Plan (BMP) have elements of recharge (e.g., Harkins Slough project, recycled water blended with managed recharge water, Murphy Crossing project), but there is no equivalent to ReNeM. ReNeM is not proposed as an alternative to the Phase 1 projects in the BMP; instead, ReNeM is intended to augment BMP efforts, generating water resources to provide an additional measure of confidence that there will be time and opportunity for the BMP to be implemented and made successful.

The primary focus of the ReNeM pilot program is on stormwater collection linked to infiltration, using a variety of techniques, to improve groundwater supplies. We describe this as "distributed stormwater collection - managed aquifer recharge:" DSC-MAR. The functional goal the ReNeM program is to offset some of the on-the-ground costs associated with operation and maintenance of DSC-MAR. The most important of these O&M costs include: (a) loss of cropped or accessible acreage, and (b) maintenance of infiltration structures (basins, drywells, etc). The idea is to provide incentives so that landowners and tenants will consider development of DSC-MAR projects, even though there may be O&M costs associated with these systems. There are programs that can provide funding to support capital costs for design, development and installation (IRWM, Prop 1, etc.), but it is frequently a challenge to raise funding to support the O&M costs, in addition to funding for program administration, design and monitoring/verification.

The ReNeM pilot program is designed with flexibility, so that sites around the PVGB can be identified, tested and selected based on a combination of factors, including: the nature of local soils, connection to an underlying aquifer that has available storage, drainage area contributing runoff, space for site development, access for monitoring and verification of system performance, interest among landowners/tenants, permit requirements, and availability of capital funding for site design and implementation. Approval of a ReNeM pilot program does not promise or guarantee that any of these conditions will be met at any sites. Rather, approval of a ReNeM pilot program allows program collaborators and stakeholders to determine if this approach is viable, can be operated in an efficient way, will attract project partners, and will generate documented benefits as intended. The ReNeM pilot program is designed to be operated for a fixed term, so that there is an opportunity to assess whether it should continue, and to allow development of a business plan for sustainability based on understanding of realistic resource, time, and personnel requirements.

II. Program Components

The ReNeM pilot program has these main components/procedures:

- (1) The pilot program will have a five (5) year operational time period. It will automatically sunset after this time unless there is agreement, and Board approval that it should continue. We propose that it will begin on 10/1/2016, running initially until 9/30/2021.
- (2) The main program goal is to develop 8-10 stormwater/recharge sites, each contributing ≥ 100 ac-ft/yr (in an average year), generating ~ 1000 ac-ft/yr of infiltration benefit across the basin.
- (3) A third-party certifier (TPC) will work in collaboration with stakeholders and the Agency to identify sites, raise funding in support of capital expenses for site development, collaborate on system designs, obtain permits, and oversee construction. Systems will be designed so as to allow accurate monitoring to verify performance and benefits.
- (4) The TPC will work with local stakeholders for each project (land owners, tenants, etc) to secure site access and install instrumentation that will permit monitoring, including a component of automated, real-time monitoring accessible by cellular or internet connection. Monitoring will help to assure proper system function and document benefits.
- (5) The TPC will prepare and deliver to the Board a ReNeM program annual report, including a quantitative assessment of infiltration benefit achieved for each site.
- (6) The TPC proposes to utilize a formula for calculating project rebates as stated below:

$$\text{Rebate} = W_{50} \times (Inf_{\text{tot}} - Inf_{\text{inc}})$$

Where,

Rebate= Rebate issued to landowner/tenant (\$)

W_{50} = 50% of unit water cost at project location (augmentation fee) (\$/ac-ft)

Inf_{tot} = total infiltration documented at the project site (ac-ft)

Inf_{inc} = incidental infiltration that would have occurred without the project (ac-ft)

The formula accounts for incidental infiltration that would have occurred without the stormwater/recharge project, and offsets costs based on a fraction of infiltration. The formula will be known by all ReNeM partners in advance of their participation in the program.

(7) The ReNeM rebate will be applied during the subsequent year.

(8) The TPC will work with the Agency and stakeholders to publicize the program and solicit interest from the PVGB community. There will be an annual call for statements of interest, and the TPC will evaluate those statements based on available data, site visits, preliminary data collection, monitoring and other information.

(9) The number and size of projects that can be brought online each year will depend on available resources, both for TPC participation and design, permitting, and installation. In general, the ReNeM pilot program is hoped to support 1-2 new projects per year, along with maintenance of existing projects from year to year (pending demonstration of viability for each project).

III. Potential Concerns

There are likely to be questions about how ReNeM can work. Here are answers to some of the most common questions.

A. Who will be the TPC?

We propose that the TPC for the pilot program will comprise personnel from UCSC and the Resource Conservation District Santa Cruz County (RCD-SCC), working in collaboration. Both groups have demonstrated interest working with willing partners in a non-regulatory manner in enhancing freshwater resources and helping to maintain viable supplies to sustain regional agriculture, domestic use, and environmental flows. One goal of the pilot program will be to develop a plan for carrying the project forward, for the long term. A long-term TPC could be a different group.

B. What will be the impact on Agency activities and staff?

The TPC will communicate regularly with the Agency and report to the Board each year.

C. Why not just open the ReNeM pilot program to everyone who wants to participate?

Not all locations are equally suitable. UCSC and RCD-SCC personnel are currently working on a regional mapping and modeling project to assess stormwater collection linked to managed recharge; this work will help with an initial screening for new field sites. There are fixed costs for sites that generate 1 ac-ft or 100 ac-ft of benefit. In a world of limited resources, personnel, and time, it makes sense to focus on sites that meet the programmatic goal of generating ≥ 100 ac-ft/yr of benefit. Of course, others can institute practices that the ReNeM pilot program helps to demonstrate as being effective, and there may be many more projects developed in coming decades. But it is important to set limits on initial ReNeM activities to give the program a chance to succeed, identify challenges, demonstrate benefits, and develop a sustainable operating model.

D. How expensive will the program be?

The cost for the ReNeM pilot program is favorable compared to the cost for alternative water supplies. The ReNeM-based fee reduction will be a fraction of the cost of water fees charged to Agency customers. Because it will contribute to enhanced groundwater storage, ReNeM will provide additional water that can be delivered to Agency customers, helping to maintain the revenue stream that supports PVGB health and sustainability and other Agency activities. When these parts of the program are considered together (rebate, new resources/revenue), ReNeM should be revenue neutral or net positive.

E. What happens if a ReNeM pilot program site does not perform as intended?

Sites that don't meet design criteria will be improved in subsequent years or shut down.

F. What will be the impact on water quality?

Studies at the Harkins Slough project show a net improvement in water quality during infiltration, with a ~50% load reduction in NO_3 . Project sites will be developed to allow monitoring and operation based on water quality. It is important to remember that the loss of recharge (because of changes in land use, climate, and other factors) causes harm to water quality. Groundwater basins developed for agriculture tend to accumulate salts; the benefits of dilution by recharge are critical for sustaining supplies. ReNeM projects can also help to improve surface water quality, contributing to stormwater management goals, and controlling export of sediment and nutrients.

G. Who pays for the TPC?

For the pilot program, the TPC should be supported with "external" funds (grants, awards, contributions, etc), independent from the Agency's operating budget. One goal of the pilot program is to develop a business model, taking into account actual personnel, time, equipment, instrumentation, and other costs. It is hard to know what these costs will be in advance, and the ReNeM pilot program will provide critical information to help develop a sustainable model going forward. Having a ReNeM program in place will help to secure external resources.

H. Why should the Agency run a ReNeM program?

The Agency developed and is implementing a BMP, in collaboration with partners and stakeholders. The BMP is moving the PVGB towards a balance of inflows and outflows. However, it will take some years before the BMP is fully implemented, and in the interim, there remains a need to enhance groundwater supplies. This will help to make up for the historic groundwater deficit. In addition, hydrologic variability means that there will be wetter and dryer years - the ReNeM approach is designed to take advantage of opportunities to improve water resources that may occur for only a few weeks each year. For example, during the recent drought, at one site currently developed for stormwater collection, it was possible to meet infiltration design targets (>100 ac-ft/yr) because the high intensity of rain events produced considerable runoff. Running a ReNeM program, with projects around the basin, can help to support the broader BMP effort, engage stakeholders, and provide an extra measure of confidence in basin sustainability.

IV. Request to Proceed with the ReNeM Pilot Program

We respectfully request that the Board of Directors of the Pajaro Valley Water Management Agency approve a plan to proceed with a five-year ReNeM Pilot Program. It will remain challenging for UCSC and RCD-SCC participants to secure funding to implement this program, but having the Agency agree to run a pilot program will greatly increase the opportunities to secure external funding, engage stakeholders, secure permits, and move projects forward.