City of Santa Cruz and Soquel Creek Water District
Collaborating to conserve, protect and create reliable water resources

DESALINATION TASK FORCE MEMORANDUM

TO: DESALINATION TASK FORCE

FROM: PROGRAM MANAGERS

SUBJECT: ENERGY STUDY STATUS REPORT

DATE: FEBRUARY 15, 2012

RECOMMENDATION: That the **scwd^2** Desalination Task Force receive the eighth Energy Study status report and support the staff recommendation that the project be designed and operated with no net increase with regards to indirect greenhouse gases.

BACKGROUND: At the March 16, 2011 **scwd^2** Task Force meeting, staff and consultants from Kennedy/Jenks Consultants (K/J) outlined the general approach to development of the Regional Seawater Desalination Project (Project) Energy Minimization and Greenhouse Gas (GHG) Reduction Study (Energy Study). Staff has provided monthly progress reports on the development of the Energy Study since that meeting as follows.

- April 2011: Report on regulatory framework, energy projections for each agency, and potential GHG reduction goals. Provided input on GHG offset/reduction project and program evaluation criteria, weighting and goal selection. (Energy Status Report No. 1)
- May 2011: Discussion on evaluation criteria, weighting and goal selection as well as information about the Energy Study Technical Working Group (ETWG) and other professional participants. (No. 2)
- June 2011: Report on the first ETWG Project Section Workshop and initial list of 45 GHG offset/reduction projects and programs. (No. 3)
- July 2011: Approval of 16 GHG offset/reduction projects and programs to further study as well as the evaluation criteria and weighting sensitivity analysis. (No. 4)
- September 2011: Presentation on sixteen draft GHG offset/reduction Project Assessments (dPAs) and hard copies of the dPAs for review and comment. (No. 5)
- October 2011: Discussion and feedback on the 16 dPAs and GHG offset/reduction project and program scoring, ranking and selection methodology. (No. 6)
- November 2011: Received information on Energy Study schedule and potential GHG offset/reduction project and program portfolio options. (No. 7)

This status report generally describes the culmination of work on the Energy Study as it relates to both the Project Environmental Impact Report (EIR) and future Energy Study policy considerations. A staff presentation will provide further detail.

DISCUSSION: The purpose of the Energy Study has been to 1) inform the EIR on the topic of energy, climate change and greenhouse gases as appropriate and 2) develop a GHG reduction strategy for the Project (Energy Plan) that would include feasible projects and a reporting, or "true up", process. The Energy Study was developed in stages that generally included the following tasks.

1. Estimate the energy to be projected (and corresponding indirect GHG emissions) by each agency with desalination as a supplemental water supply source. Note: Project's main GHG emissions are indirect in nature, i.e. they are a result of the associated electrical consumption of the Project, not direct emissions similar to a power plant.
2. Compile the regulatory framework and requirements related to energy and greenhouse gas emissions for desalination projects in California.
3. Describe the different GHG reduction requirements or goals for the Project including:
    a. California Environmental Quality Act (CEQA) Threshold of Significance (TOS).
    b. No Net Increase.
    c. California Global Warming Solutions Act (AB32).
    d. City's Climate Action Plan.
    e. Carbon-free.
4. Brainstorm potential GHG offset/reduction projects and programs and conduct an initial screening to develop a viable list. Assess these options based on a common evaluation template.
5. Score and rank the potential options according to evaluation criteria and weighting developed by **scwd**^{2} team.
6. Create short list of preferred projects and programs, determine appropriate requirements and goals for each agency, and draft **scwd**^{2} Energy Minimization and Greenhouse Gas Reduction Plan.

The development of the Energy Study has proven to be a fairly complex and therefore dynamic process. As new information was gathered about the regulatory drivers, projects/programs, goals, CEQA requirements, etc., the scope of work remained relatively consistent. However, because of the continued and valuable refinement to the Energy Study work, aspects of the energy and GHG strategy were enhanced. These enhancements are distilled into two categories and described in further detail below.

CEQA Analysis: Greenhouse Gas Impact

As mentioned above, one of the main goals of the Energy Study work is to inform the EIR on the topics of energy, climate change and GHGs. With respect to CEQA, the lead agency has a choice to either develop the Project such that it does not increase system-wide indirect GHG emissions from existing conditions or evaluate the potential GHG impact of the Project against a "threshold of significance."

If a lead agency chooses the latter, the following considerations must be made. The recently amended CEQA Guidelines do not identify a threshold of significance for project-related GHGs; rather, the lead agency is required to consider whether the project emissions exceed a relevant threshold of significance (TOS). The onus falls on the lead agencies (i.e., staff from the City and District charged with the development of the EIR) to recommend a TOS based on substantial evidence. A relevant TOS can 1) be an existing threshold used in the industry that applies to the project, 2) be a unique threshold that applies to the project.

Staff and **scwd**[2] consultants have spent the last several months researching this particular topic and the options described above. Staff and **scwd**[2] consultants have concluded that the most appropriate approach is to develop a project that avoids an indirect GHG impact. The following discussion provides the background to this determination beginning with a detailed description of the two options associated with development of a relevant TOS.

Option 1, use an existing, adopted threshold that applies to the project: When appropriate, this simple approach is commonly taken when developing CEQA significance thresholds for any topic. In the case of GHGs, this option could be used if there were agencies (such as California Air Resources Board or any of the regional air boards) with adopted TOSs, or if there were projects of a substantially similar nature that had adopted TOSs. The Monterey Bay Air Quality Management District has not yet formally adopted a TOS and probably won't in the foreseeable future. Furthermore, staff research indicated that no other relevant regional air boards have appropriate adopted TOSs. Therefore, staff then looked to recent projects throughout the state in an attempt to identify a suitable threshold.

Project Title and Lead Agency	Date	Source of TOS	Threshold of Significance/Source	Applicable?[1]
Seawater Desalination Project at Huntington Beach SEIR (Dudek, 2010) Lead Agency: City of Huntington Beach	2010	SCAQMD adopted threshold	10,000 $MTCO_2e$/yr Industrial threshold applied to all direct and indirect sources of GHG emissions during construction and operation)	No. Industrial TOS should not be applied to indirect emissions.
California American Water Company Coastal Water Project EIR (ESA, 2009) Lead Agency: CPUC	2009	Interim CARB TOS	7,000 $MTCO_2e$/yr (Industrial threshold applied to non-transportation related emissions)	No. TOS never formally adopted. Industrial TOS not applicable.
Marin Municipal Water District Desalination Project EIR (URS, 2008) Lead Agency: MMWD	2008		Not compared to a threshold.	Project did not include substantial GHG evaluation.

Project Title and Lead Agency	Date	Source of TOS	Threshold of Significance/Source	Applicable?[1]
Precise Development Plan and Desalination Plant Project EIR and EIR Addendum (Dudek, 2006 and 2009) Lead Agency: City of Carlsbad	2006	GHG emissions and climate change not evaluated in original EIR, but were evaluated in an EIR Addendum	NA, as project would achieve a no net increase with implementation of Energy and GHG Reduction Plan	Yes, but not a TOS
City of Santa Cruz Integrated Water Plan Program EIR (EDAW, 2005) Lead Agency: City of Santa Cruz	2005	GHG emissions and climate change not evaluated	NA	No TOS determination.
UCSC Marine Science Campus Projects Draft EIR (UCSC, 2011) Lead Agency: UC Regents	2011	BAAQMD adopted thresholds	10,000 $MTCO_2e/yr$ (Stationary source threshold applied to all stationary source emissions) 1,100 $MTCO_2e/yr$ (Land use development threshold applied to all other GHG emissions)	No. Project is neither a stationary source nor a land use project. TOS subject to pending legal challenge.
Soquel Creek Water District Well Master Plan EIR (ESA, 2011) Lead Agency: Soquel Creek Water District	2011	Interim CARB Threshold	7,000 $MTCO_2e/yr$ (Industrial threshold applied to non-transportation related emissions)	No. Industrial TOS should not be applied to indirect emissions.
East County Substation, Tule Wind, and Energia Sierra Juarez Gen-Tie Projects Final EIR/EIS (Dudek, 2011) Lead Agency: CPUC and BLM (project located in San Diego County)	2011	SCAQMD adopted threshold	10,000 $MTCO_2e/yr$ (Industrial threshold applied to all direct and indirect sources of GHG emissions during construction and operation)	No. Industrial TOS should not be applied to indirect emissions.

Project Title and Lead Agency	Date	Source of TOS	Threshold of Significance/Source	Applicable?[1]
Water Supply Improvement Project Draft EIR (ECORP Consulting, Inc., 2011) Lead Agency: Indian Wells Valley Water District	2011	SCAQMD adopted threshold	10,000 $MTCO_2e/yr$ (Industrial threshold applied to all direct and indirect sources of GHG emissions during construction and operation)	No. Industrial TOS should not be applied to indirect emissions.
West Coast Recycling Group Metal Recycling Facility Project Final EIR/EIS (AECOM, 2011) Lead Agency: City of West Sacramento	2011	BAAQMD adopted thresholds	10,000 $MTCO_2e/yr$ (Stationary source threshold applied to all stationary source emissions)	No. Project is not a stationary source. TOS subject to pending legal challenge.
Central Valley Gas Storage Final MND (Dudek 2010) Lead Agency: California Public Utilities Commission (project located in Colusa County)	2010	SCAQMD adopted threshold	10,000 $MTCO_2e/yr$ (Industrial threshold applied to all direct and indirect sources of GHG emissions during construction and operation)	No. Industrial TOS should not be applied to indirect emissions.

1. Detailed definitions of Industrial, Stationary, Non-Stationary and Land-Use projects will be presented during the staff presentation.

Due to the issues listed above, none of the available thresholds were found to be applicable to the project. As a result, staff turned its attention to the second option.

Option 2, Develop a unique standard or threshold for the project: This option would entail developing a threshold for the project and providing "substantial evidence" as to why the threshold is appropriate and applicable. The onus falls on the lead agency's staff to develop a significance threshold that would satisfy the substantial evidence requirements of CEQA, and would require using a methodology similar to what the MBUAPCD and other air districts have attempted to use. This specific analysis would focus on emissions profiles that are similar to the proposed project. The challenges in considering this approach include the following.

- Lack of similar examples of project types that "fit" the emissions profile of the proposed project within the air basin as evidenced by the above-reported research report.
- Uncertainty over how to separate these unique projects from all other land use development projects relative to a "capture" rate for non-stationary source emitters
- Legal vulnerability associated with this approach given the aforementioned uncertainties

- Unknown and unquantifiable time and costs in reaching an acceptable TOS

This option is therefore not considered to be a practicable approach to find an appropriate significance threshold. Staff then considered a third option.

Option 3, Consider a project approach that avoids a net increase in GHG emissions: As mentioned above, lead agencies may develop a project with design features that, when implemented, eliminate the GHG impact. If this option is exercised, there is no need to establish a quantitative or numeric threshold because the recommended "No Net Increase" or "Net Carbon Neutral" Project, by definition, avoids all potentially significant adverse GHG impacts. The Project design features include:

  - Energy efficiency measures within desalination facility boundaries (such as energy recovery devices, variable frequency drive motors, enhanced membrane technology). This strategy, of course, also insures both agencies equal access to the lower energy use/costs.
  - Renewable energy generation within the Project's boundaries (such as solar photovoltaic installation on facility buildings) This option also assures each agency has access to the benefits of the energy produced.
  - Renewable energy generation outside of the facility boundary (such as microhydro generator installation at Graham Hill Water Treatment Plant)
  - Certified offset purchases to reach "No Net Increase" reduction target. Again, assuring that the user of the energy within the desalination plant is the agency financing and benefitting from the expense.

Staff recommends that the project be developed as a "No Net Increase" or "Net Carbon Neutral" project as for the CEQA evaluation. The methodology used to calculate the level of reduction required to achieve a no net increase goal will be discussed in detail during the staff presentation.

Develop GHG Reduction Strategy for the Project

While the EIR will demonstrate a relatively straightforward approach to achieving carbon neutrality, there will be continued opportunity to further develop the Project GHG reduction approach. For example, the following considerations could be made at a later date; during Project approval or the permitting process.

- Implement any of the remaining ETWG identified GHG reduction projects and programs.
- Adopt a more conservative GHG reduction goal such as carbon negative or carbon free.
- Implement other emerging technologies that provide cost effective alternatives to the ETWG identified projects and programs.

FISCAL IMPACT: There is no fiscal impact associated with this item. However, the presentation will describe the cost implications of the recommended approach.