HOUSE OF REPRESENTATIVES STAFF ANALYSIS

BILL #: HB 199 Desalination Technology

SPONSOR(S): Kelly and others
TIED BILLS: **IDEN./SIM. BILLS:** SB 708

REFERENCE	ACTION	ANALYST	STAFF DIRECTOR
1) Committee on Environmental Protection	7 Y, 0 N	Deslatte	Kliner
2) Environment & Natural Resources Council	15 Y, 0 N	Deslatte / Perkins	Dixon / Hamby
3) Policy & Budget Council			
4)			
5)			

SUMMARY ANALYSIS

The bill requires the Secretary of the Department of Environmental Protection (DEP), in coordination with the five water management districts (wmds), to conduct a study examining all current and available desalination technologies. The study must include an analysis of existing desalination projects in the state and recommendations for a plan to implement desalination technologies that are environmentally and fiscally sound and that will provide sustainability of the current water supply demands of the state as well as long-term potable water supply demands based on projected population growth. The study and plan recommendations must be submitted by June 30, 2009.

DEP suggests hiring a part-time OPS position for the one-time study and will pay the cost out of existing operating funds. The estimated expense associated with this position is less than $40,000.

The bill takes effect July 1, 2008.

FULL ANALYSIS

I. SUBSTANTIVE ANALYSIS

A. HOUSE PRINCIPLES ANALYSIS:
Provide limited government—The bill requires DEP, in coordination with the five wmds, to conduct a study examining all desalination technologies. The study must include an analysis of existing desalination projects in the state and recommendations for a plan to implement desalination technologies that are environmentally and fiscally sound and that will provide sustainability of the current water supply demands of the state as well as long-term potable water supply demands based on projected population growth.

B. EFFECT OF PROPOSED CHANGES:

Current Situation

Desalination is a process in which salt is removed from saline water (seawater, brackish groundwater) and de-mineralized to produce freshwater, leaving behind waste effluent referred to as brine. Seawater desalination has been around since at least the 4th century B.C. There are many types of desalination. One type is distillation and it is the most common thermal process for desalination worldwide. England is the home of the first patented distillation process, which took place in 1869.
Today, one of the leading methods of desalination is reverse osmosis. With the development of new membranes (which use thin sheets of special materials that act as selective barriers separating pure water from salts), reverse osmosis typically uses less energy than that of reverse osmosis plants in the past, which can lead to a reduction in overall desalination costs. However, desalination still remains energy intensive and future costs will continue to depend on the price of both energy and desalination technology.

Desalination is capable of producing large quantities of drinking water; however, desalination typically requires large amounts of energy as well as specialized, expensive infrastructure, making the process very costly. The large energy reserves of many Middle Eastern countries, along with their relative water scarcity, have led to extensive construction of desalination plants in this region. Saudi Arabia's desalination plants account for about 24% of total world capacity. The world's largest desalination plant is the Jebel Ali Desalination Plant (Phase 2) in the United Arab Emirates. It is a dual-purpose facility that uses multi-stage flash distillation and is capable of producing 300 million cubic meters of water per year.[1]

The global desalination industry estimates that the worldwide desalination capacity will increase 61% between 2006 and 2010 and a total of 140% by 2015 to 97.5 million cubic meters of water per day. Most of the growth in capacity will occur in the Middle East and northern Africa, but capacity will also increase in China, India, Australia, Spain, the U.S., and even the U.K.[2]
In the U.S., the largest reverse osmosis seawater desalination facility is the Tampa Bay Seawater Desalination plant. In December, 2007, the plant started producing 25 million gallons of drinking water per day.

The plant uses three main elements in its desalination process:

1. **Pretreatment**— Seawater is first treated with chemicals to allow eventual settling of particles. It then goes through traveling screens that filter out shells and other larger debris. The screened water then goes through settling chambers. Similar to a traditional surface water treatment

[1] http://www.worldwater.org/data20062007/Table21.pdf 100 Largest Desalination Plants Planned, in Construction, or in Operation—January 1, 2005]

[2] Environmental Science & Technology, http://pubs.acs.org/subscribe/journals/esthag-w/2007/july/policy/kc_desalination.html

process, particles in the conditioned water clump together and settle out. The next step in pretreatment is sand filtration, where smaller particles are filtered from the water. Next, diatomaceous earth filters eliminate microscopic materials before the water passes through cartridge filters, the last barrier before the reverse osmosis process. [3]

2. **Reverse Osmosis**— High pressure forces the pretreated water through semi-permeable membranes, separating saltwater from freshwater and leaving salt and other minerals behind in a salty solution.

3. **Post-treatment**—Chemicals are added to stabilize the water.

The concentrated seawater left over from the desalination process will not significantly increase Tampa Bay's salinity because it is diluted in up to 1.4 billion gallons per day of power plant cooling water, a 70-to-1 dilution ratio.[4]

Besides the Tampa Bay Seawater Desalination Plant, Florida has about 130 other drinking water systems which use reverse osmosis. Many of these are smaller facilities. Desalination is typically a component of the water supply planning required by s. 373.0361, F.S., for the five water management districts. In fact, the St. John's River and Southwest Florida Water Management Districts have undertaken analyses on the feasibility of desalination projects.

Proposed Changes

The bill requires the Secretary of DEP, in coordination with the five water management districts, to conduct a study examining all current and available desalination technologies. The study must include an analysis of existing desalination projects in the state and recommendations for a plan to implement desalination technologies that are environmentally and fiscally sound and that will provide sustainability of the current water supply demands of the state as well as long-term potable water supply demands based on projected population growth. The report is due no later than June 30, 2009, and must be submitted to the Governor, the President of the Senate, and the Speaker of the House of Representatives.

C. SECTION DIRECTORY:

Section 1. Finds that desalination of seawater is a proven technology; requires DEP, in coordination with the water management districts, to issue a report on the current state of desalination projects and technologies including recommendations for a plan to implement desalination technologies; requires the report to be due no later than June 30, 2009.

Section 2. The bill takes effect July 1, 2008.

II. FISCAL ANALYSIS & ECONOMIC IMPACT STATEMENT

A. FISCAL IMPACT ON STATE GOVERNMENT:

1. Revenues:

   None

2. Expenditures:

   See Fiscal Comments

[3] Tampa Bay Seawater Desalination website, www.tampabaywater.org/watersupply/tbdesalprocess.aspx

[4] *Id.*

B. FISCAL IMPACT ON LOCAL GOVERNMENTS:

1. Revenues:

None

2. Expenditures:

None

C. DIRECT ECONOMIC IMPACT ON PRIVATE SECTOR:

According to the DEP analysis, the report and its recommendations could help the water management districts determine whether to use desalination projects in the future. The projects are technologically advanced and complicated to build and may require contract operator assistance. The private sector would have to provide the personnel and expertise to build and operate such facilities.

D. FISCAL COMMENTS:

DEP suggests hiring a part-time OPS position for the one-time study and will pay the cost out of existing operating funds. The estimated expense associated with this position is less than $40,000.

III. COMMENTS

A. CONSTITUTIONAL ISSUES:

1. Applicability of Municipality/County Mandates Provision:

This bill does not appear to require counties or municipalities to take an action requiring the expenditure of funds, reduce the authority that counties or municipalities have to raise revenue in the aggregate, nor reduce the percentage of state tax shared with counties or municipalities.

2. Other:

None

B. RULE-MAKING AUTHORITY:

The bill directs the Secretary of DEP to coordinate with the water management districts to conduct a study examining all current and available desalination technologies. No rulemaking authority is necessary nor granted by the bill.

C. DRAFTING ISSUES OR OTHER COMMENTS:

The following comments were provided by DEP:

> It should be noted that many local fiscal and site-specific environmental considerations affect the choice to build desalination facilities. The dynamic of these considerations is changing as the cost of desalination, particularly by reverse osmosis, has come down and the availability of freshwater supplies is drying up. The linkage between growth management and water supply provided for in chapter 373, F.S., and specifically the regional water supply planning provisions of s. 373.0361, F.S., provide an appropriate framework for evaluating desalination and other water supply projects at the planning stage.

D. STATEMENT OF THE SPONSOR

No statement submitted.

IV. AMENDMENTS/COUNCIL SUBSTITUTE CHANGES

None